NOVEMBER 1953 GALAXY Science Fiction

# Galaxy
## SCIENCE FICTION

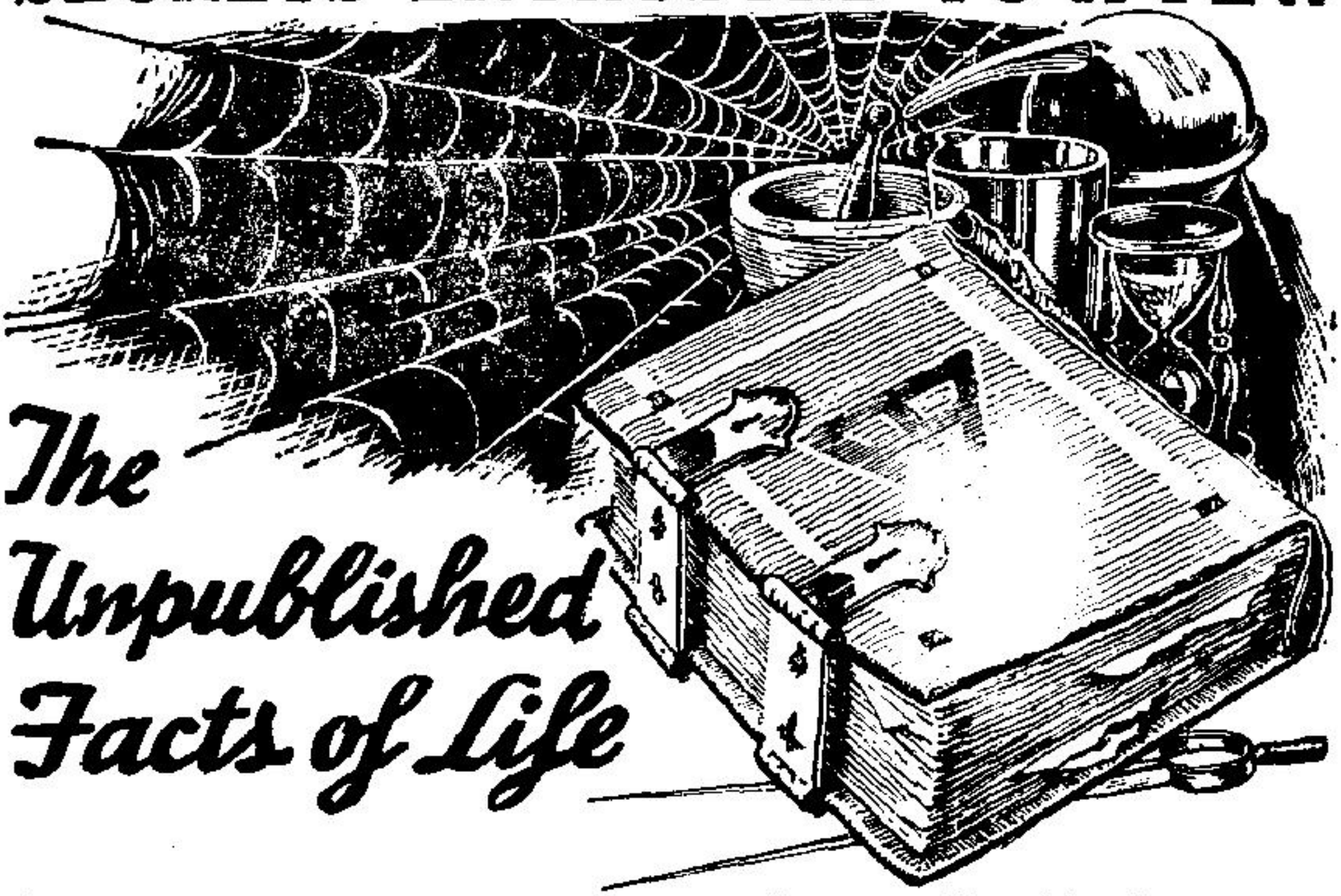
NOVEMBER 1953

35¢

ANC


IS ARTIFICIAL LIFE POSSIBLE? By WILLY LEY

# SECRETS ENTRUSTED TO A FEW



# *The Unpublished Facts of Life*

THERE ARE some things that can not be generally told—*things you ought to know*. Great truths are dangerous to some—but factors for *personal power* and *accomplishment* in the hands of those who understand them. Behind the tales of the miracles and mysteries of the ancients, lie centuries of their secret probing into nature's laws—their amazing discoveries of *the hidden processes of man's mind*, and *the mastery of life's problems*. Once shrouded in mystery to avoid their destruction by mass fear and ignorance, these facts remain a useful heritage for the thousands of men and women who privately use them in their homes today.

## THIS FREE BOOK

The Rosicrucians (not a religious organization), an age-old brotherhood of learning, have preserved this secret wisdom in their archives for centuries. *They now invite you to share the practical helpfulness of their teachings*. Write today for a free copy of the book, "The Mastery of Life." Within its pages may lie a new life of opportunity for you. Address: Scribe A.Y.L.

## *The* ROSICRUCIANS

(AMORC) • SAN JOSE • CALIFORNIA • U.S.A.

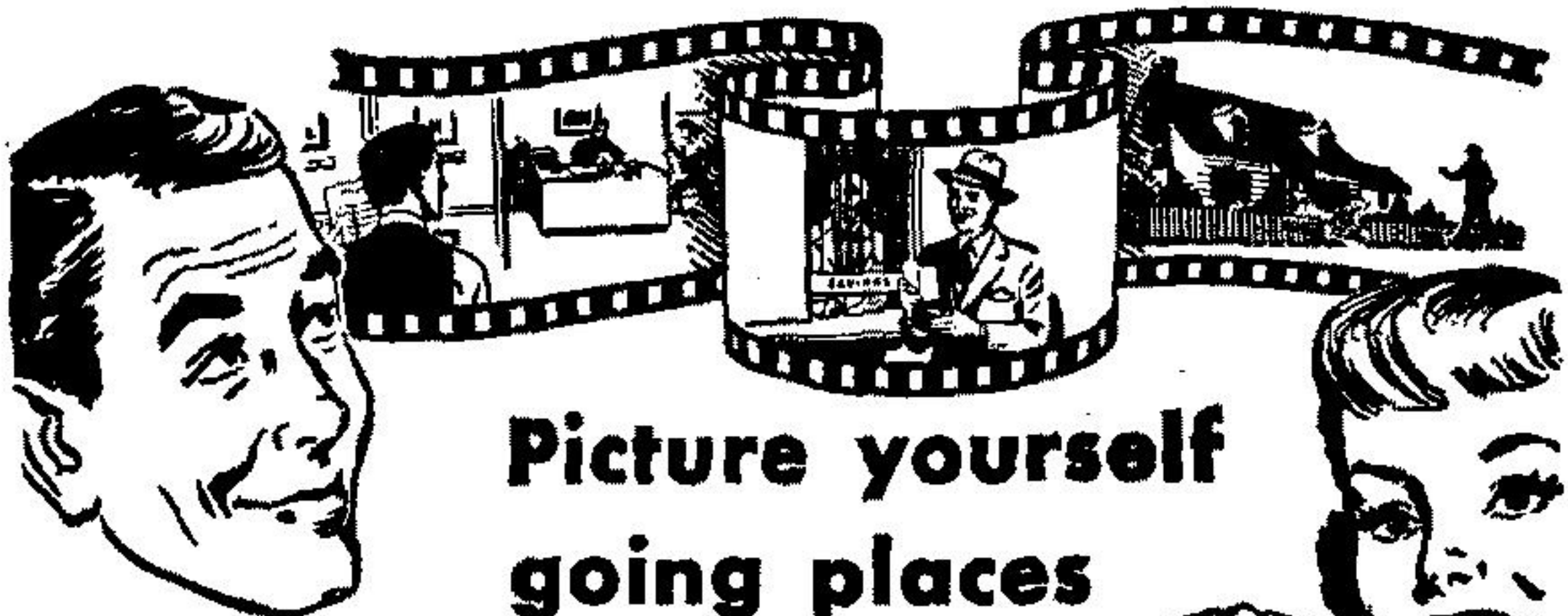
Scribe: A.Y.L. The Rosicrucians (AMORC)
San Jose, California, U. S. A.

Please send copy of sealed booklet, "The Mastery of Life," which I shall read as directed.

*Name* _____

*Address* _____

*City* _____



# Picture yourself going places

You've done it often. Call it day-dreaming if you like, but you've seen yourself in a bigger job — giving orders and making decisions — driving off in a smart new car — buying your family a fine home.

There's nothing wrong with dreams. But how about making them come true? *You can do it*, if you're willing to try!

Look around you. The men who are going places are the *trained* men. They've learned special skills that bring them better jobs and higher pay. It's the men *without* training whose dreams never come true.

What are you going to *do* about it? Just wait and wish? If you really *want to succeed*, you can get the training you need by studying at home in your spare time. International Correspondence Schools offer you a course in just about any field you choose, giving you the practical plus the bedrock facts and theory. No skimming or skimping! And you'll be earning while you learn. Students report better jobs and more pay within a few months.

Look over the list of subjects in the coupon below. Pick out the one that interests you most — the one that holds the greatest future for you. Then mark the coupon, and mail it today. *Find* out what I. C. S. can do for you. It costs only a stamp or postcard, but it's the first step if you want *to go places!*


**SMARTEST THING HE EVER DID**

"I noticed that the trained men held the better jobs. That's when I decided to take an I. C. S. course. Enrolling with I. C. S. was one of the smartest things I ever did. The position as Plant Engineer I hold today is largely due to the 'know-how' derived from my I. C. S. texts. I. C. S. can help any man who will study."

L. P. S., Elkhart, Ind.

**FREE BOOK** "How to Succeed." 36 pages packed with worthwhile success tips. Step-by-step plan of action. Pocket size edition. Absolutely free. Send coupon below.

## INTERNATIONAL CORRESPONDENCE SCHOOLS

BOX 2254-B, SCRANTON 9, PENNA.

Without cost or obligation, send me "HOW to SUCCEED" and the booklet about the course BEFORE which I have marked X:

**ART**
- ☐ Commercial Art
- ☐ Magazine and Book Illustrating
- ☐ Cartooning
- ☐ Show Card and Sign Lettering
- ☐ Fashion Illustrating

**AUTOMOTIVE**
- ☐ Automobile Mechanic
- ☐ Auto-Elec. Technician
- ☐ Auto Body Rebuilding and Refinishing
- ☐ Diesel—Gas Engines

**AVIATION**
- ☐ Aeronautical Engineering Jr.
- ☐ Aircraft Engine Mechanic
- ☐ Airplane Drafting

**BUILDING**
- ☐ Architecture
- ☐ Arch. Drafting
- ☐ Building Contractor
- ☐ Estimating
- ☐ Carpenter and Mill Work
- ☐ Carpenter Foreman
- ☐ Reading Blueprints
- ☐ House Planning
- ☐ Plumbing
- ☐ Heating
- ☐ Sheet Fitting
- ☐ Air Conditioning
- ☐ Electrician

**BUSINESS**
- ☐ Business Administration
- ☐ Certified Public Accountant
- ☐ Accounting
- ☐ Bookkeeping
- ☐ Stenography and Typing
- ☐ Secretarial
- ☐ Federal Tax
- ☐ Business Correspondence
- ☐ Personnel and Labor Relations
- ☐ Advertising
- ☐ Retail Business Management
- ☐ Managing Small Business
- ☐ Sales Management
- ☐ Salesmanship
- ☐ Traffic Management

**CHEMISTRY**
- ☐ Chemical Engineering
- ☐ Chemistry
- ☐ Analytical Chemistry
- ☐ Petroleum—Natural Gas
- ☐ Pulp and Paper Making
- ☐ Plastics

**CIVIL, STRUCTURAL ENGINEERING**
- ☐ Civil Engineering
- ☐ Structural Engineering
- ☐ Surveying and Mapping
- ☐ Structural Drafting
- ☐ Highway Engineering
- ☐ Reading Blueprints
- ☐ Concrete Construction
- ☐ Sanitary Engineering

**DRAFTING**
- ☐ Aircraft Drafting
- ☐ Architectural Drafting
- ☐ Electrical Drafting
- ☐ Mechanical Drafting
- ☐ Structural Drafting
- ☐ Sheet Metal Drafting
- ☐ Mine Surveying and Drafting

**ELECTRICAL**
- ☐ Electrical Engineering
- ☐ Electrician
- ☐ Electrical Maintenance
- ☐ Electrical Drafting
- ☐ Electric Power and Light
- ☐ Lineman

**HIGH SCHOOL**
- ☐ High School Subjects
- ☐ College Preparatory
- ☐ Mathematics
- ☐ Commercial
- ☐ Good English

**MECHANICAL AND SHOP**
- ☐ Mechanical Engineering
- ☐ Industrial Engineering
- ☐ Industrial Supervision
- ☐ Foremanship
- ☐ Mechanical Drafting
- ☐ Machine Design-Drafting
- ☐ Machine Shop Practice
- ☐ Tool Design
- ☐ Industrial Instrumentation
- ☐ Machine Shop Inspection
- ☐ Reading Blueprints
- ☐ Toolmaking
- ☐ Gas—Electric Welding
- ☐ Heat Treatment—Metallurgy
- ☐ Sheet Metal Work
- ☐ Sheet Metal Pattern Drafting
- ☐ Refrigeration

**POWER**
- ☐ Combustion Engineering
- ☐ Diesel—Electric
- ☐ Electric Light and Power
- ☐ Stationary Steam Engineering
- ☐ Stationary Firemen

**RADIO, TELEVISION, COMMUNICATIONS**
- ☐ General Radio
- ☐ Radio Operation
- ☐ Radio Servicing—FM
- ☐ Television
- ☐ Electronics
- ☐ Telephone Work

**RAILROAD**
- ☐ Locomotive Engineer
- ☐ Diesel Locomotive
- ☐ Air Brakes ☐ Car Inspector
- ☐ Railroad Administration

**TEXTILE**
- ☐ Textile Engineering
- ☐ Cotton Manufacture
- ☐ Rayon Manufacture
- ☐ Woolen Manufacture
- ☐ Loom Fixing
- ☐ Finishing and Dyeing
- ☐ Textile Designing

**HOME ARTS**
- ☐ Dressmaking and Designing
- ☐ Cookery
- ☐ Tea Room Management

Name_____ Age_____ Home Address_____

City_____ State_____ Working Hours_____ A.M. to_____ P.M.

Occupation_____

Special tuition rates to members of the Armed Forces. Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada

NOVEMBER, 1953 Vol. 7, No. 2

# Galaxy

## SCIENCE FICTION

## ALL ORIGINAL STORIES • NO REPRINTS!

## CONTENTS


| | | PAGE |
|---|---|---|
| **NOVELETS** | | |
| KEEP YOUR SHAPE | by Robert Sheckley | 5 |
| THE BOOK | by Michael Shaara | 44 |
| **SHORT STORIES** | | |
| MR. PRESIDENT | by Stephen Arr | 22 |
| UNBEGOTTEN CHILD | by Winston Marks | 67 |
| CLEAN BREAK | by Roger Dee | 82 |
| **BOOK-LENGTH SERIAL—Installment 2** | | |
| THE CAVES OF STEEL | by Isaac Asimov | 98 |
| **SCIENCE DEPARTMENT** | | |
| FOR YOUR INFORMATION | by Willy Ley | 35 |
| **FEATURES** | | |
| EDITOR'S PAGE | by H. L. Gold | 3 |
| FORECAST | | 66 |
| GALAXY'S FIVE STAR SHELF | by Groff Conklin | 77 |


Cover by EMSH Showing PLOTTING ROOM OF EARTH CENTER

ROBERT GUINN, Publisher

H. L. GOLD, Editor WILLY LEY, Science Editor EVELYN PAIGE, Assistant Editor

W. I. VAN DER POEL, Art Director JOAN De MARIO, Production Manager

GALAXY *Science Fiction* is published monthly by Galaxy Publishing Corporation. Main offices: 421 Hudson Street, New York 14, N. Y. 35c per copy. Subscriptions: (12 copies) $3.50 per year in the United States, Canada, Mexico, South and Central America and U.S. Possessions. Elsewhere $4.50. Entered as second-class matter at the Post Office, New York, N. Y.  All material submitted must be accompanied by self-addressed stamped envelopes. The publisher assumes no responsibility for unsolicited material. All stories printed in this magazine are fiction, and any similarity between characters and actual persons is coincidental.

Printed in the U.S.A. by the Guinn Co., Inc. Title Reg. U.S. Pat. Off.

# THAT'S LIFE, ETC.

WITH a little practice, anyone can be a cliché expert. There is a choice of diplomas: either a look of pained contempt or amused pity. Some sophisticates own both. The ability to recognize a cliché and scorn it is a necessary passport to literate circles.

Intolerance is justified, of course. Through incessant repetition, clichés become mere automatic verbal responses to given stimuli.

But there ought to be a postgraduate course, for few things are harder to manufacture than clichés. A successful cliché is (or was originally) the keenest view of a subject and the most concise way of expressing it.

Psychology textbooks need chapters to state: *What can't be cured must be endured; take it* (an insult or hurt) *whence it comes; sticks and stones may break my bones, but names can never hurt me; that's life; go fight City Hall; here today, gone tomorrow; into every life a little rain must fall; this, too, shall pass; every cloud has a silver lining.*

The trouble is not the content or phrasing of the cliché—except that, if done with extreme acuteness and compression, the observation becomes easy to remember and use. People are not likely to say: *The tendency to dwell on past errors is an indication of emotional immaturity and must be rigorously checked by recognition of the fact that no amount of such regret can alter a prior experience.* Not when the same lesson can be put this clearly: *Don't cry over spilled milk.*

Whoever first said *It's not the heat; it's the humidity* undoubtedly made a first-rate scientific observation and did so with the word-economy of a Newton or, for that matter, a Shakespeare.

The actual difference between a cliché and a potential one is purely subject matter. Many masterpieces of clarity and pithiness don't—well, *make the grade* because they're too specialized. A statement must be usable often and widely before it can qualify as a cliché.

Remember Poe's "The Purloined Letter"? He showed that the best place to hide something is right out in full view, where it's sure to be overlooked. Well, a guaranteed way to take over an alien world is to inflict its knowledge on it in the form of clichés. Finding a startling truth in a brilliant new simplification

is a lot easier than peeling the verdigris off an old one.

When a statement that qualifies in every way somehow fails to achieve clichédom in 400 years, I suppose it never will. I don't understand how Michelangelo's *Only work can eliminate the traces of work* escaped. It was fortunate for me that it did —not having been deafened to his lesson, I was able to apply it to my writing and editing. This editorial you're reading, for example, is the fifth version I've written. Whatever you may think of it, it's clearer and more readable than the first four, which is all Michelangelo was saying.

There are two other entrants that I'm anxious to share, though I know they won't ever be petrified into standard speech.

One is by the late Supreme Court Justice Oliver Wendell Holmes: *Continuity with the past is not a duty; it is only a necessity.*

Any number of civilizations might have been saved from extinction if they'd been relieved of mandatory veneration of the past. Literally, there's no future in ancestor worship.

Holmes's injunction also has considerable personal value. Undue attachment to one's own past can be equally ritualistic and equally disastrous.

As a possible cliché, his statement might, like *Ontogeny recapitulates phylogeny,* have a very restricted currency. Certainly neither one fits broad daily needs.

The same, of course, is true of *Mankind is just emerging from antiquity,* which was said by Bernard Berenson, octogenarian philosopher and expert on Italian painting.

"Oh, we are, are we?" is a good healthy first reaction. "And how about all our scientific progress? What other era in history can match it?"

Exactly. No other era can . . . which is why many people, perhaps the majority, blame our current problems on science. But no blame is called for if it's true that mankind is just emerging from antiquity.

Our discoveries are not at fault. We primitively use them as bigger and more destructive *ballistae,* our bomb shelters are larger shields, and radioactivity and disease germs are only the present-day equivalent of plowing salt into the soil of Carthage so nothing may ever grow there again.

See what I mean? I needed all this room to explain the concept. A historian would devote a whole book to it.

Berenson made the point in six words.

—H. L. GOLD

***Only a race as incredibly elastic as the Grom could have a single rule of war:***

# KEEP YOUR SHAPE

By ROBERT SHECKLEY

Illustrated by VIDMER

PID the Pilot slowed the ship almost to a standstill, and peered anxiously at the green planet below.

Even without instruments, there was no mistaking it. Third from its sun, it was the only planet in this system capable of sustaining life. Peacefully it swam beneath its gauze of clouds.

It looked very innocent. And yet, twenty previous Grom expeditions had set out to prepare this planet for invasion—and vanished utterly, without a word.

Pid hesitated only a moment, before starting irrevocably down. There was no point in hovering and worrying. He and his two crewmen were as ready now as they would ever be. Their compact Displacers were stored in body pouches, inactive but ready.

Pid wanted to say something

to his crew, but wasn't sure how to put it.

The crew waited. Ilg the Radioman had sent the final message to the Grom planet. Ger the Detector read sixteen dials at once, and reported, "No sign of alien activity." His body surfaces flowed carelessly.

NOTICING the flow, Pid knew what to say to his crew. Ever since they had left Grom, shape-discipline had been disgustingly lax. The Invasion Chief had warned him; but still, he had to do something about it. It was his duty, since lower castes such as Radiomen and Detectors were notoriously prone to Shapelessness.

"A lot of hopes are resting on this expedition," he began slowly. "We're a long way from home now."

Ger the Detector nodded. Ilg the Radioman flowed out of his prescribed shape and molded himself comfortably to a wall.

"However," Pid said sternly, "distance is no excuse for promiscuous Shapelessness."

Ilg flowed hastily back into proper Radioman's shape.

"Exotic forms will undoubtedly be called for," Pid went on. "And for that we have a special dispensation. But remember—any shape not assumed strictly in the line of duty is a foul, lawless device of The Shapeless One!"

Ger's body surfaces abruptly stopped flowing.

"That's all," Pid said, and flowed into his controls. The ship started down, so smoothly coordinated that Pid felt a glow of pride.

They were good workers, he decided. He just couldn't expect them to be as shape-conscious as a high-caste Pilot. Even the Invasion Chief had told him that.

"Pid," the Invasion Chief had said at their last interview, "we need this planet desperately."

"Yes, sir," Pid had said, standing at full attention, never quivering from Optimum Pilot's Shape.

"One of you," the Chief said heavily, "must get through and set up a Displacer near an atomic power source. The army will be standing by at this end, ready to step through."

"We'll do it, sir," Pid said.

"This expedition has to succeed," the Chief said, and his features blurred momentarily from sheer fatigue. "In strictest confidence, there's considerable unrest on Grom. The Miner caste is on strike, for instance. They want a new digging shape. Say the old one is inefficient."

Pid looked properly indignant. The Mining Shape had been set down by the Ancients fifty thousand years ago, together with the

rest of the basic shapes. And now these upstarts wanted to change it!

"That's not all," the Chief told him. "We've uncovered a new Cult of Shapelessness. Picked up almost eight thousand Grom, and I don't know how many more we missed."

Pid knew that Shapelessness was a lure of The Shapeless One, the greatest evil that the Grom mind could conceive of. But why, he wondered, did so many Grom fall for His lures?

THE Chief guessed his question. "Pid," he said, "I suppose it's difficult for you to understand. Do you enjoy Piloting?"

"Yes, sir," Pid said simply. *Enjoy* Piloting! It was his entire life! Without a ship, he was nothing.

"Not all Grom feel that way," the Chief said. "I don't understand it either. All my ancestors have been Invasion Chiefs, back to the beginning of time. So of course *I* want to be an Invasion Chief. It's only natural, as well as lawful. But the lower castes don't feel that way." The Chief shook his body sadly. "I've told you this for a reason. We Grom need more room. This unrest is caused purely by crowding. All our psychologists say so. Another planet to expand into will cure everything. So we're counting on you, Pid."

"Yes, sir," Pid said, with a glow of pride.

The Chief rose to end the interview. Then he changed his mind and sat down again.

"You'll have to watch your crew," he said. "They're loyal, no doubt, but low-caste. And you know the lower castes."

Pid did indeed.

"Ger, your Detector, is suspected of harboring Alterationist tendencies. He was once fined for assuming a quasi-Hunter shape. Ilg has never had any definite charge brought against him. But I hear that he remains immobile for suspiciously long periods of time. Possibly, he fancies himself a Thinker."

"But, sir," Pid protested. "If they are even slightly tainted with Alterationism or Shapelessness, why send them on this expedition?"

The Chief hesitated before answering. "There are plenty of Grom I could trust," he said slowly. "But those two have certain qualities of resourcefulness and imagination that will be needed on this expedition." He sighed. "I really don't understand why those qualities are usually linked with Shapelessness."

"Yes, sir," Pid said.

"Just watch them."

"Yes, sir," Pid said again, and

saluted, realizing that the interview was at an end. In his body pouch he felt the dormant Displacer, ready to transform the enemy's power source into a bridge across space for the Grom hordes.

"Good luck," the chief said. "I'm sure you'll need it."

THE ship dropped silently toward the surface of the enemy planet. Ger the Detector analyzed the clouds below, and fed data into the Camouflage Unit. The Unit went to work. Soon the ship looked, to all outward appearances, like a cirrus formation.

Pid allowed the ship to drift slowly toward the surface of the mystery planet. He was in Optimum Pilot's Shape now, the most efficient of the four shapes alloted to the Pilot caste. Blind, deaf and dumb, an extension of his controls, all his attention was directed toward matching the velocities of the high-flying clouds, staying among them, becoming a part of them.

Ger remained rigidly in one of the two shapes alloted to Detectors. He fed data into the Camouflage Unit, and the descending ship slowly altered into an altocumulus.

There was no sign of activity from the enemy planet.

Ilg located an atomic power source, and fed the data to Pid. The Pilot altered course. He had reached the lowest level of clouds, barely a mile above the surface of the planet. Now his ship looked like a fat, fleecy cumulus.

And still there was no sign of alarm. The unknown fate that had overtaken twenty previous expeditions still had not showed itself.

Dusk crept across the face of the planet as Pid maneuvered near the atomic power installation. He avoided the surrounding homes and hovered over a clump of woods.

Darkness fell, and the green planet's lone moon was veiled in clouds.

One cloud floated lower.

And landed.

"Quick, everyone out!" Pid shouted, detaching himself from the ship's controls. He assumed the Pilot's Shape best suited for running, and faced out the hatch. Ger and Ilg hurried after him. They stopped fifty yards from the ship, and waited.

Inside the ship a little-used circuit closed. There was a silent shudder, and the ship began to melt. Plastic dissolved, metal crumpled. Soon the ship was a great pile of junk, and still the process went on. Big fragments broke into smaller fragments, and split, and split again.

Pid felt suddenly helpless,

watching his ship scuttle itself. He was a Pilot, of the Pilot caste. His father had been a Pilot, and his father before him, stretching back to the hazy past when the Grom had first constructed ships. He had spent his entire childhood around ships, his entire manhood flying them.

Now, shipless, he was naked in an alien world.

IN a few minutes there was only a mound of dust to show where the ship had been. The night wind scattered it through the forest. And then there was nothing at all.

They waited. Nothing happened. The wind sighed and the trees creaked. Squirrels chirped, and birds stirred in their nests. An acorn fell to the ground.

Pid heaved a sigh of relief and sat down. The twenty-first Grom expedition had landed safely.

There was nothing to be done until morning, so Pid began to make plans. They had landed as close to the atomic power installation as they dared. Now they would have to get closer. Somehow, one of them had to get very near the reactor room, in order to activate the Displacer.

Difficult. But Pid felt certain of success. After all, the Grom were strong on ingenuity.

Strong on ingenuity, he thought bitterly, but terribly short of radioactives. That was another reason why this expedition was so important. There was little radioactive fuel left, on any of the Grom worlds. Ages ago, the Grom had spent their store of radioactives in spreading throughout their neighboring worlds, occupying the ones that they could live on.

Now, colonization barely kept up with the mounting birthrate. New worlds were constantly needed.

This particular world, discovered in a scouting expedition, was needed. It suited the Grom perfectly. But it was too far away. They didn't have enough fuel to mount a conquering space fleet.

Luckily, there was another way. A better way.

Over the centuries, the Grom scientists had developed the Displacer. A triumph of Identity Engineering, the Displacer allowed mass to be moved instantaneously between any two linked points.

One end was set up at Grom's sole atomic energy plant. The other end had to be placed in promixity to another atomic power source, and activated. Diverted power then flowed through both ends, was modified, and modified again.

Then, through the miracle of Identity Engineering, the Grom

could *step* through from planet to planet; or pour through in a great, overwhelming wave.

It was quite simple.

But twenty expeditions had failed to set up the Earth-end Displacer.

What had happened to them was not known.

For no Grom ship had ever returned to tell.

BEFORE dawn they crept through the woods, taking on the coloration of the plants around them. Their Displacers pulsed feebly, sensing the nearness of atomic energy.

A tiny, four-legged creature darted in front of them. Instantly, Ger grew four legs and a long, streamlined body and gave chase.

"Ger! Come back here!" Pid howled at the Detector, throwing caution to the winds.

Ger overtook the animal and knocked it down. He tried to bite it, but he had neglected to grow teeth. The animal jumped free, and vanished into the underbrush. Ger thrust out a set of teeth and bunched his muscles for another leap.

"*Ger!*"

Reluctantly, the Detector turned away. He loped silently back to Pid.

"I was hungry," he said.

"You were not," Pid said sternly.

"Was," Ger mumbled, writhing with embarrassment.

Pid remembered what the Chief had told him. Ger certainly did have Hunter tendencies. He would have to watch him more closely.

"We'll have no more of that," Pid said. "Remember—the lure of Exotic Shapes is not sanctioned. Be content with the shape you were born to."

Ger nodded, and melted back into the underbrush. They moved on.

At the extreme edge of the woods they could observe the atomic energy installation. Pid disguised himself as a clump of shrubbery, and Ger formed himself into an old log. Ilg, after a moment's thought, became a young oak.

The installation was in the form of a long, low building, surrounded by a metal fence. There was a gate, and guards in front of it.

The first job, Pid thought, was to get past that gate. He began to consider ways and means.

From the fragmentary reports of the survey parties, Pid knew that, in some ways, this race of Men were like the Grom. They had pets, as the Grom did, and homes and children, and a culture. The inhabitants were skilled mechanically, as were the Grom.

But there were terrific differ-

ences, also. The Men were of fixed and immutable form,. like stones or trees. And to compensate, their planet boasted a fantastic array of species, types and kinds. This was completely unlike Grom, which had only eight distinct forms of animal life.

And evidently, the Men were skilled at detecting invaders, Pid thought. He wished he knew how the other expeditions had failed. It would make his job much easier.

A MAN lurched past them on two incredibly stiff legs. Rigidity was evident in his every move. Without looking, he hurried past.

"I know," Ger said, after the creature had moved away. "I'll disguise myself as a Man, walk through the gate to the reactor room, and activate my Displacer."

"You can't speak their language," Pid pointed out.

"I won't speak at all. I'll ignore them. Look." Quickly Ger shaped himself into a Man.

"That's not bad," Pid said.

Ger tried a few practice steps, copying the bumpy walk of the Man.

"But I'm afraid it won't work," Pid said.

"It's perfectly logical," Ger pointed out.

"I know. Therefore the other expeditions must have tried it. And none of them came back."

There was no arguing that. Ger flowed back into the shape of a log. "What, then?" he asked.

"Let me think," Pid said.

Another creature lurched past, on four legs instead of two. Pid recognized it as a Dog, a pet of Man. He watched it carefully.

The Dog ambled to the gate, head down, in no particular hurry. It walked through, unchallenged, and lay down in the grass.

"H'm," Pid said.

They watched. One of the Men walked past, and touched the Dog on the head. The Dog stuck out its tongue and rolled over on its side.

"I can do that," Ger said excitedly. He started to flow into the shape of a Dog.

"No, wait," Pid said. "We'll spend the rest of the day thinking it over. This is too important to rush into."

Ger subsided sulkily.

"Come on, let's move back," Pid said. He and Ger started into the woods. Then he remembered Ilg.

"Ilg?" he called softly.

There was no answer.

"Ilg!"

"What? Oh, yes," an oak tree said, and melted into a bush. "Sorry. What were you saying?"

"We're moving back," Pid said.

"Were you, by any chance, Thinking?"

"Oh, no," Ilg assured him. "Just resting."

Pid let it go at that. There was too much else to worry about.

THEY discussed it for the rest of the day, hidden in the deepest part of the woods. The only alternatives seemed to be Man or Dog. A Tree couldn't walk past the gates, since that was not in the nature of trees. Nor could anything else, and escape notice.

Going as a Man seemed too risky. They decided that Ger would sally out in the morning as a Dog.

"Now get some sleep," Pid said.

Obediently his two crewmen flattened out, going immediately Shapeless. But Pid had a more difficult time.

Everything looked too easy. Why wasn't the atomic installation better guarded? Certainly the Men must have learned something from the expeditions they had captured in the past. Or had they killed them without asking any questions?

You couldn't tell what an alien would do.

Was that open gate a trap?

Wearily he flowed into a comfortable position on the lumpy ground. Then he pulled himself together hastily.

He had gone Shapeless!

Comfort was not in the line of duty, he reminded himself, and firmly took a Pilot's Shape.

But a Pilot's Shape wasn't constructed for sleeping on damp, bumpy ground. Pid spent a restless night, thinking of ships, and wishing he were flying one.

He awoke in the morning tired and ill-tempered. He nudged Ger.

"Let's get this over with," he said.

Ger flowed gaily to his feet.

"Come on, Ilg," Pid said angrily, looking around. "Wake up."

There was no reply.

"Ilg!" he called.

Still there was no reply.

"Help me look for him," Pid said to Ger. "He must be around here somewhere."

Together they tested every bush, tree, log and shrub in the vicinity. But none of them was Ilg.

Pid began to feel a cold panic run through him. What could have happened to the Radioman?

"Perhaps he decided to go through the gate on his own," Ilg suggested.

Pid considered the possibility. It seemed unlikely. Ilg had never shown much initiative. He had always been content to follow orders.

They waited. But midday came, and there was still no sign of Ilg.

"We can't wait any longer,"

Pid said, and they started through the woods. Pid wondered if Ilg *had* tried to get through the gates on his own. Those quiet types often concealed a foolhardy streak.

But there was nothing to show that Ilg had been successful. He would have to assume that the Radioman was dead, or captured by the Men.

That left two of them to activate a Displacer.

And he still didn't know what had happened to the other expeditions.

AT the edge of the woods, Ger turned himself into a facsimile of a Dog. Pid inspected him carefully.

"A little less tail," he said.

Ger shortened his tail.

"More ears."

Ger lengthened his ears.

"Now even them up."

They became even.

Pid inspected the finished product. As far as he could tell, Ger was perfect, from the tip of his tail to his wet, black nose.

"Good luck," Pid said.

"Thanks." Cautiously Ger moved out of the woods, walking in the lurching style of Dogs and Men. At the gate the guard called to him. Pid held his breath.

Ger walked past the Man, ignoring him. The Man started to walk over. Ger broke into a run.

Pid shaped a pair of strong legs for himself, ready to dash if Ger was caught.

But the guard turned back to his gate. Ger stopped running immediately, and strolled quietly toward the main door of the building.

Pid dissolved his legs with a sigh of relief . . . and then tensed again.

The main door was closed!

Pid hoped the Radioman wouldn't try to open it. That was *not* in the nature of Dogs.

As he watched, another Dog came running toward Ger. Ger backed away from him. The Dog approached and sniffed. Ger sniffed back.

Then both of them ran around the building.

That was clever, Pid thought. There was bound to be a door in the rear.

He glanced up at the afternoon sun. As soon as the Displacer was activated, the Grom armies would begin to pour through. By the time the Men recovered from the shock, a million or more Grom troops would be here, weapons and all. With more following.

The day passed slowly, and nothing happened.

Nervously Pid watched the front of the plant. It shouldn't be taking so long, if Ger were successful.

Late into the night he waited. Men walked in and out of the installation, and Dogs barked around the gates. But Ger did not appear.

Ger had failed. Ilg was gone. Only he was left.

And *still* he didn't know what had happened.

BY morning, Pid was in complete despair. He knew that the twenty-first Grom expedition to this planet was near the point of complete failure. Now it was all up to him.

He saw that workers were arriving in great number, rushing through the gates. He decided to take advantage of the apparent confusion, and started to shape himself into a Man.

A Dog walked past the woods where he was hiding.

"Hello," the Dog said.

It was Ger!

"What happened?" Pid asked, with a sigh of relief. "Why were you so long? Couldn't you get in?"

"I don't know," Ger said, wagging his tail. "I didn't try."

Pid was speechless.

"I went hunting," Ger said complacently. "This form is ideal for Hunting, you know. I went out the rear gate with another Dog."

"But the expedition — your duty —"

"I changed my mind," Ger told him. "You know, Pilot, I never wanted to be a Detector."

"But you were *born* a Detector!"

"That's true," Ger said. "But it doesn't help. I always wanted to be a Hunter."

Pid shook his entire body in annoyance. "You can't," he said, very slowly, as one would explain to a Gromling. "The Hunter shape is forbidden to you."

"Not here it isn't," Ger said, still wagging his tail.

"Let's have no more of this," Pid said angrily. "Get into that installation and set up your Displacer. I'll try to overlook this heresy."

"No," Ger said. "I don't want the Grom here. They'd ruin it for the rest of us."

"He's right," a nearby oak tree said.

"Ilg!" Pid gasped. "Where are you?"

BRANCHES stirred. "I'm right here," Ilg said. "I've been Thinking."

"But—your caste—"

"Pilot," Ger said sadly, "why don't you wake up? Most of the people on Grom are miserable. Only custom makes us take the caste-shape of our ancestors."

"Pilot," Ilg said, "all Grom are born Shapeless!"

"And being born Shapeless, all

Grom should have Freedom of Shape," Ger said.

"Exactly," Ilg said. "But he'll never understand. Now excuse me. I want to Think." And the oak tree was silent.

Pid laughed humorlessly. "The Men will kill you off," he said. "Just as they killed off all the other expeditions."

"No one from Grom has been killed," Ger told him. "The other expeditions are right here."

"Alive?"

"Certainly. The Men don't even know we exist. That Dog I was Hunting with is a Grom from the twelfth expedition. There are hundreds of us here, Pilot. We like it."

Pid tried to absorb it all. He had always known that the lower castes were lax in caste-consciousness. But this was preposterous!

This planet's secret menace was —freedom!

"Join us, Pilot," Ger said. "We've got a paradise here. Do you know how many species there are on this planet? An uncountable number! There's a shape to suit every need!"

Pid ignored them. Traitors!

He'd do the job all by himself.

So Men were unaware of the presence of the Grom. Getting near the reactor might not be so difficult after all. The others had failed in their duty because they were of the lower castes, weak and irresponsible. Even the Pilots among them must have been secretly sympathetic to the Cult of Shapelessness the Chief had mentioned, or the alien planet could never have swayed them.

What shape to assume for his attempt?

Pid considered.

A Dog might be best. Evidently Dogs could wander pretty much where they wished. If something went wrong, Pid could change his shape to meet the occasion.

"The Supreme Council will take care of all of you," he snarled, and shaped himself into a small brown Dog. "I'm going to set up the Displacer myself."

He studied himself for a moment, bared his teeth at Ger, and loped toward the gate.

HE loped for about ten feet and stopped in utter horror.

The smells rushed at him from all directions. Smells in a profusion and variety he had never dreamed existed. Smells that were harsh, sweet, sharp, heavy, mysterious, overpowering. Smells that terrified. Alien and repulsive and inescapable, the odors of Earth struck him like a blow.

He curled his lips and held his breath. He ran on for a few steps, and had to breathe again. He almost choked.

He tried to remold his Dog-nostrils to be less sensitive. It

didn't work. It wouldn't, so long as he kept the Dog-shape. An attempt to modify his metabolism didn't work either.

All this in the space of two or three seconds. He was rooted in his tracks, fighting the smells, wondering what to do.

Then the noises hit him.

They were a constant and staggering roar, through which every tiniest whisper of sound stood out clearly and distinct. Sounds upon sounds—more noise than he had ever heard before at one time in his life. The woods behind him had suddenly become a madhouse.

Utterly confused, he lost control and became Shapeless.

He half-ran, half-flowed into a nearby bush. There he re-Shaped, obliterating the offending Dog ears and nostrils with vicious strokes of his thoughts.

The Dog-shape was out. Absolutely. Such appalling sharpness of senses might be fine for a Hunter such as Ger—he probably gloried in them. But another moment of such impressions would have driven Pid the Pilot mad.

What now? He lay in the bush and thought about it, while gradually his mind threw off the last effects of the dizzying sensory assault.

He looked at the gate. The Men standing there evidently hadn't noticed his fiasco. They were looking in another direction.

. . . a Man?

Well, it was worth a try.

STUDYING the Men at the gate, Pid carefully shaped himself into a facsimile—a synthesis, actually, embodying one characteristic of that, another of this.

He emerged from the side of the bush opposite the gate, on his hands and knees. He sniffed the air, noting that the smells the Man-nostrils picked up weren't unpleasant at all. In fact, some of them were decidedly otherwise. It had just been the acuity of the Dog-nostrils, the number of smells they had detected and the near-brilliance with which they had done so, that had shocked him.

Also, the sounds weren't half so devastating. Only relatively close sounds stood out. All else was an undetailed whispering.

Evidently, Pid thought, it had been a long time since Men had been Hunters.

He tested his legs, standing up and taking a few clumsy steps. *Thud* of foot on ground. Drag the other leg forward in a heavy arc. *Thud.* Rocking from side to side, he marched back and forth behind the bush. His arms flapped as he sought balance. His head wobbled on its neck, until he re-

membered to hold it up. Head up, eyes down, he missed seeing a small rock. His heel turned on it. He sat down, hard.

The ankle hurt. Pid curled his Man-lips and crawled back into the bush.

The Man-shape was too unspeakably clumsy. It was offensive to plod one step at a time. Body held rigidly upright. Arms wobbling. There had been a deluge of sense-impressions in the Dog-shape; there was dull, stiff, half-alive inadequacy to the Man-shape.

Besides, it was dangerous, now that Pid thought it over, as well as distasteful. He couldn't control it properly. It wouldn't look right. Someone might question him. There was too much about Men he didn't—couldn't—know. The planting of the Displacer was too important a thing for him to fumble again. Only luck had kept him from being seen during the sensory onslaught.

The Displacer in his body pouch pulsed and tugged, urging him to be on his way toward the distant reactor room.

Grimly, Pid let out the last breath he had taken with his Man-lungs, and dissolved the lungs.

What shape to take?

Again he studied the gate, the Men standing beside it, the building beyond in which was the all-important reactor.

A small shape was needed. A fast one. An unobtrusive one.

He lay and thought.

The bush rustled above him. A small brown shape had fluttered down to light on a twig. It hopped to another twig, twittering. Then it fluttered off in a flash, and was gone.

That, Pid thought, was it.

A SPARROW that was not a Sparrow rose from the bush a few moments later. An observer would have seen it circle the bush, diving, hedgehopping, even looping, as if practicing all manuevers possible to Sparrows.

Pid tensed his shoulder muscles, inclined his wings. He slipped off to the right, approached the bush at what seemed breakneck speed, though he knew this was only because of his small size. At the last second he lifted his tail. Not quite quickly enough. He swooped up and over the top of the bush, but his legs brushed the top leaves, his beak went down, and he stumbled in air for a few feet back-forward.

He blinked beady eyes as if at a challenge. Back toward the bush at a fine clip, again up and over. This time cleanly.

He chose a tree. Zoomed into its network of branches, wove a web of flight, working his way around and around the trunk, over and

under branches that flashed before him, through crotches with no more than a feather's-breath to spare.

At last he rested on a low branch, and found himself chirping in delight.

The tree extruded a feeler from the branch he sat on, and touched his wings and tail.

"Interesting," said the tree. "I'll have to try that shape some time."

Ilg.

"Traitor," hissed Pid, growing a mouth in his chest to hiss it, and then he did something that caused Ilg to exclaim in outrage.

Pid flew out of the woods. Over the underbrush and across the open space toward the gate.

This body would do the trick!

This body would do anything!

He rose, in a matter of a few Sparrow heartbeats, to an altitude of a hundred feet. From here the gate, the Men, the building were small, sharp shapes against a green-brown mat. Pid found that he could see not only with unaccustomed clarity, but with a range of vision that astonished him. To right and to left he could see far into the hazy blue of the sky, and the higher he rose the farther he could see.

He rose higher.

The Displacer pulsed, reminding him of the job he had to do.

HE stiffened his wings and glided, regretfully putting aside his desires to experiment with this wonderful shape, at least for the present. After he planted the Displacer, he would go off by himself for a while and do it just a little more—somewhere where Ilg and Ger would not see him—before the Grom Army arrived and the invasion began.

He felt a tiny twinge of guilt, as he circled. It was Evil to want to keep this alien flying shape any longer than was absolutely necessary to the performance of his duty. It was a device of the Shapeless One—

But what had Ilg said? *All Grom are born Shapeless.* It was true. Grom children were amorphous, until old enough to be instructed in the caste-shape of their ancestors.

Maybe it wasn't *too* great a sin to alter your Shape, then—just once in a long while. After all, one must be fully aware of the nature of Evil in order to meaningfully reject it.

He had fallen lower in circling. The Displacer pulse had strengthened. For some reason it irritated him. He drove higher on strong wings, circled again. Air rushed past him—a smooth, whispering flow, pierced by his beak, streaming invisibly past his sharp eyes, moving along his body in tiny

turbulences that moved his feathers against his skin.

It occurred to him—or rather struck him with considerable force—that he was satisfying a longing of his Pilot Caste that went far deeper than Piloting.

He drove powerfully with his wings, felt tonus across his back, shot forward and up. He thought of the controls of his ship. He imagined flowing into them, becoming part of them, as he had so often done—and for the first time in his life the thought failed to excite him.

No machine could compare with this!

What he would give to have wings of his own!

. . . *Get from my sight, Shapeless One!*

The Displacer must be planted, activated. All Grom depended on him.

He eyed the building, far below. He would pass over it. The Displacer would tell him which window to enter—which window was so near the reactor that he could do his job before the Men even knew he was about.

He started to drop lower, and the Hawk struck.

IT had been above him. His first inkling of danger was the sharp pain of talons in his back, and the stunning blow of a beak across his head.

Dazed, he let his back go Shapeless. His body-substance flowed from the grasp of the talons. He dropped a dozen feet and resumed Sparrow-shape, hearing an astonished squawk from the attacker.

He banked, and looked up. The Hawk was eying him.

Talons spread again. The sharp beak gaped. The Hawk swooped.

Pid had to fight as a Bird, naturally. He was four hundred feet above the ground.

So he became an impossibly deadly Bird.

He grew to twice the size of the

Hawk. He grew a foot-long beak with a double razor's edge. He grew talons like six inch scimitars. His eyes gleamed a red challenge.

The Hawk broke flight, squalling in alarm. Frantically, tail down and widespread, it thundered its wings and came to a dead stop six feet from Pid.

Looking thoughtfully at Pid, it allowed itself to plummet. It fell a hundred feet, spread its wings, stretched its neck and flew off so hastily that its wings became blurs.

Pid saw no reason to pursue it.

Then, after a moment, he did.

He glided, keeping the Hawk in sight, thoughts racing, feeling the newness, the power, the wonder of Freedom of Shape.

Freedom . . .

He did not want to give it up.

The bird-shape was wondrous. He would experiment with it. Later, he might tire of it for a time and assume another—a crawling or running shape, or even a swimming one. The possibilities for excitement, for adventure, for fulfilment and simple sensual pleasure were endless!

Freedom of Shape was—obviously, now that you thought on it—the Grom birthright. And the caste-system was artificial—obviously. A device for political and priestly benefit—obviously.

*Go away, Shapeless One . . . this does not concern you.*

He rose to a thousand feet, two thousand, three. The Displacer's pulse grew feebler and finally vanished.

At four thousand feet he released it and watched it spin downward, vanish into a cloud.

Then he set out after the Hawk, which was now only a dot on the horizon. He would find out how the Hawk had broken flight as it had—skidded on air—he wanted to do that too! There were so many things he wanted to learn about flying. In a week, he thought, he should be able to duplicate all the skill that millenia had evolved into Birds. Then his new life would really begin.

He became a torpedo-shape with huge wings, and sped after the Hawk.

**ROBERT SHECKLEY**

---

The city of the future, and no very distant future, will have no trolley poles or wires and no horses. All movements will be on rails by silent air motors or by horseless carriages, equally silent. All pavements will be asphalt. Unlimited light will be as cheap as unlimited water is today. No coal will be delivered at private homes and no ashes taken from them. With no horses, no coal, and no ashes, street dirt will be reduced to a minimum. With no factory fires and no kitchen or furnace fires, the air will be as pure in the city as in the country. Trees will have a chance. Houses will be warmed and lighted as easily and cheaply as they are now supplied with water. A city will be a pretty nice place to live in when the first twenty years of the twentieth century are passed.—*The Philadelphia Press, July*, 1896.

*Which* century was that?

# Mr. President

By STEPHEN ARR

***He had been overwhelmingly elected. Messages of sympathy poured in, but they couldn't help . . . nothing could.***

GEORGE WONG stood pale and silent by the video screen, listening to the election returns, a long-stemmed glass of champagne clutched forgotten in his trembling right hand.

The announcer droned on: "—latest returns from Venus, with half of the election districts reporting, give three billion four hundred and ninety-six million votes for Wong, against one billion, four hundred million for Thompson, one billion one hundred million for Miccio, and nine hundred million for Kau. These results, added to the almost complete returns from Earth and the first fragmentary reports from Mars, clearly indicate a landslide vote for Wong as the next President of the Solar Union. The two billion votes from Ganymede and Callisto, which will be received early tomorrow morning, cannot appreciably affect the results. The battle for the twenty-five Vice-

Illustrated by DICK FRANCIS

Presidents is less clear. It is certain that Thompson, Miccio, Kau, Singh, and DuLavier will all be among those elected, but in what order is not yet . . ."

Wong leaned over and snapped the video off. His shoulders sagged. He leaned against the console as though too tired to move, a slight, narrow-shouldered man with a very high forehead and thin receding black hair. His large, sad, almond-shaped eyes and yellow-tinted skin indicated that there was a good deal of Asiatic in the mixed blood that flowed through his veins.

"I'm sorry, truly sorry," Michael Thompson said sympathetically, placing a friendly arm across the narrow shoulders of the successful candidate. They were alone in the living room of the hotel suite in New Geneva, which they had shared for the campaign. "The people chose well. After the wonderful job you did in organizing the colonization of Io and Europa, you were the logical man. And then you do have the fantastic Responsibility Quotient of 9.6 out of 10. Anyway," he added with a weary shrug, "don't feel too bad—it looks as though I'll be First Vice-President."

A brief ghost of a smile crossed George Wong's face. "We who are about to die salute you," he said, lifting his glass in a bitter toast to the blank video screen.

Thompson, the man who was to be First Vice-President, silently joined him.

"At least," Wong sighed, putting his empty glass down on the video, "I don't have a family. Look at poor Kau. At Miccio. With wives and children, how they must have suffered when they learned they had been drafted by the conventions . . . Well, I guess there's nothing else to do but to go to bed and wait until they come for me in the morning. Good night, Michael."

"Good night, George," Michael Thompson said. He turned toward his own room. "I *am* sorry," he said again.

WONG had already eaten breakfast and was dressed in an inconspicuous tweed suit for the inauguration when the chimes sounded, telling him that they were at the door. Slowly, he walked to the door and opened it.

"Good morning, Mr. President," the man outside said cheerily, flashing his famous grin. George Wong immediately recognized Al Grimm, the man who had been personal secretary to sixty-three Presidents. He was one of the vast army of civil servants who kept the wheels of government turning smoothly until Presidents were able to make

the decisions that would create policy.

"Good morning, Al," George Wong said. "I am afraid I'll have to place myself completely in your hands for these first few days. Do we go to the Executive Mansion for the inauguration now?"

"Yes, sir. Then, after your inauguration, to the office. Messages of condolence have been pouring in all night, but I don't think you want to bother with them. However, I am afraid we will have to bring up some of the problems that have arisen in the two weeks since President Reynolds left office."

"How is he?" Wong asked. "I knew him, you know. He taught at Venus University at the same time I did. He was a fine man."

"I'm afraid he's no better," Al said, shaking his head. "We're doing all we can for him, but he won't even speak to his wife. You know how difficult it is."

"Yes, I know," Wong said.

They rode downstairs in silence and walked to the Presidential Copter parked in the street in front of the house. A few guards loitered in the vicinity, but there were no crowds. They entered the plush copter, which rose smoothly under its whirling blades and carried them over the city, landing finally on the lawn of the Executive Mansion.

Chief Justice Herz met them, dressed in a blue business suit, and after they shook hands he administered the oath.

"Do you, George Wong," he asked, "swear to make every decision you are asked to make as President of the Solar Union for the benefit of the people of the Union and in accord with what you believe to be fair and just, fully cognizant of the fact that the welfare of seventy-five billion citizens of the Union is dependent on you?"

"I do," George Wong said, through a painfully dry throat that would barely permit the words to come out.

THEY all shook hands again. Then Al Grimm led the President across the grassy lawn, into the mansion, and up to the office that had served over a thousand Presidents. Wong entered it nervously. It was a large plain room, severely decorated. Tentatively, he slid into the chair behind the huge steel desk, and began opening the drawers. He found them fully stocked with tapes, a recorder, all the other necessities. The desk and everything else in the room was brand new. There was no trace anywhere of his predecessors, and he was relieved to find it so. The Psychology Department at work, he thought.

"While we are moving your

effects into the living quarters, Mr. President," Al said from the doorway, "I wonder if we could start discussing the problem of the Gnii . . . their Ambassadors have presented an ultimatum, and they demand an answer today."

SO soon, President Wong thought. Couldn't he have just a few hours to get used to his office, to wander through the building, to explore the green garden that he could see from his barred window stretching out behind the mansion?

For a second, he almost rebelled; but even as he thought of answering no, he realized that he never would. The Psych Agents had measured his Responsibility Quotient at 9.6, and they didn't make mistakes.

"Of course," he answered with forced enthusiasm. "Who do you suggest I discuss the matter with? For that matter, who are the Gnii?"

"I have the Manager of Defense, the Manager of Trade, and the Manager of Foreign Affairs waiting in the anteroom. With your permission, I'll call them in and they'll explain the problem. But first, if you would sign this order . . . it has already been approved by President Rey[redacted]lds and by all of the Managers concerned."

President Wong took the paper. It was an order sending a space platoon, 5,000 warships and 500,000 men, to the system of Altair A, to place themselves under the command of the Grasvian fleet for an attack against the system of Altair D.

The President frowned. "What's the story behind this?"

"As you know," Al explained patiently, "there is an unwritten agreement throughout the Galaxy that if any system conquers too many other systems, an inter-system police force is formed to cut the conqueror down. Since for all practical purposes, there is an infinity of systems in the Galaxy, and as each conqueror borders on more and more of them as he grows larger in three-dimensional expansion, unlike the one-dimensional conquests that used to occur on the surface of planets, conquest of the Galaxy is an obvious impossibility. However, the inhabitants of Altair D seem to have embarked on a policy of reckless expansion that could reach us in time."

"I see," President Wong said. "How far away are they?"

"It will take the platoon sixteen years to get to the rendezvous. They will remain for ten years, then return. Because of the distance, we are not expected to send more than this token force."

PRESIDENT Wong looked at the order. It had already been signed by President Reynolds, by the Managers of Defense and of Foreign Affairs. After all, even though forty-two years was a long period of time to chop out of a man's life, only 500,000 men were involved, and it was the duty of every citizen to give his life for his planet if required.

With an impatient motion, he rolled his thumbprint in the soft plastic signature space, and held it for a second as it hardened. Then he threw the order into a basket labeled OUTGOING CORRESPONDENCE.

His first official duty completed, he should have felt exhilerated; but instead, nagging thoughts of guilt tugged at his brain.

Who were the inhabitants of Altair D, anyway? How did he know that the police action was just? Shouldn't he get out the whole file and go over it?

But that would take days . . . and there was the matter of the Gnii, whoever they were.

The three managers entered. President Wong stood up and shook hands with them. They didn't waste time on other preliminaries, but rushed straight into business.

"The Gnii," the Manager of Trade, a large, red-faced man said, "demand that we remove our trading planetoid from their system. They allege that the planetoid is a security risk, in that it could be used for remote-control bombing of any of their planets. They threaten that if we don't remove it voluntarily, they will attack it, and their Ambassadors are here in person to take our reply to their ultimatum."

There was nothing unusual in that, President Wong knew. Since both spaceships and any other known means of communication traveled at the speed of light, it was now more common to send Ambassadors on important missions than to send messages.

"What do you think we should do?" President Wong asked the Manager of Trade.

"I THINK we should tell them to go to hell," the Manager of Trade replied, his heavy face turning redder. "After all, we have a million trading planetoids out in the Galaxy—if we retreat here, we set a dangerous precedent."

"I see," Wong said, frowning. "I don't recall any alien trading planetoids in *our* system."

"Of course not, Mr. President," said the Manager of Foreign Affairs a tall, lean, distinguished-looking gentleman with blue eyes and iron-gray hair. "We don't permit them, for much the same reason that the Gnii want them

removed from their system. Trading planetoids are usually only tolerated in backward systems. Apparently the Gnii no longer desire to be considered backward. I, for one, think that we would be making a mistake not to accede to their request."

"Oh, that's very fine, decent, sporting and all that," the Manager of Trade said irritatedly. "But I have to worry about feeding this overpopulated system of ours, which would starve if it weren't for intersystem trade—a significant part of which is carried on through the planetoids."

"Can we protect the threatened planetoid?" President Wong asked the Manager of Defense, a short, slim black man with flaming red hair.

The Manager of Defense considered his reply carefully. "Not if they are willing to pay a terrific price to destroy it," he said finally. "After all, it's thirty-three years away. While we can send out a fleet immediately that would get there at the same time as the Ambassadors, and before they could mount an attack, we hardly could send reinforcements and replacements once the battle is joined. But from the best information available, I think that a small force of twenty or twenty-five thousand troops should be able to frighten the Gnii out of doing anything foolish. They aren't very far advanced."

"Thirty-three years," President Wong said frowning. "That means a mixed crew with facilities for children. I am told that things often go wrong on that type of mission."

The Manager of Defense nodded. "They do," he agreed shortly. "However, I have analyzed that problem in detail in my report."

President Wong sighed. "If you gentlemen will leave your reports with me, I will make my decision by tomorrow morning."

Each of the Managers gave him several rolls of tape. Those of the Manager of Trade felt by far the heaviest. President Wong slipped them into the racks in his upper left-hand desk drawer.

"Ask the Gnii to come in," he said to Al.

AL pushed a button on the arm of his chair, and the door swung open. Four large spidery creatures entered the room, followed by a small bald man. Their round bodies were encased in plastic globes, in which a whitish translucent gas swirled. They walked over to the President's desk, and the leader extended a hairy leg.

With an effort, President Wong forced himself to take the leg with his hand and pump it up and down. He noticed that the

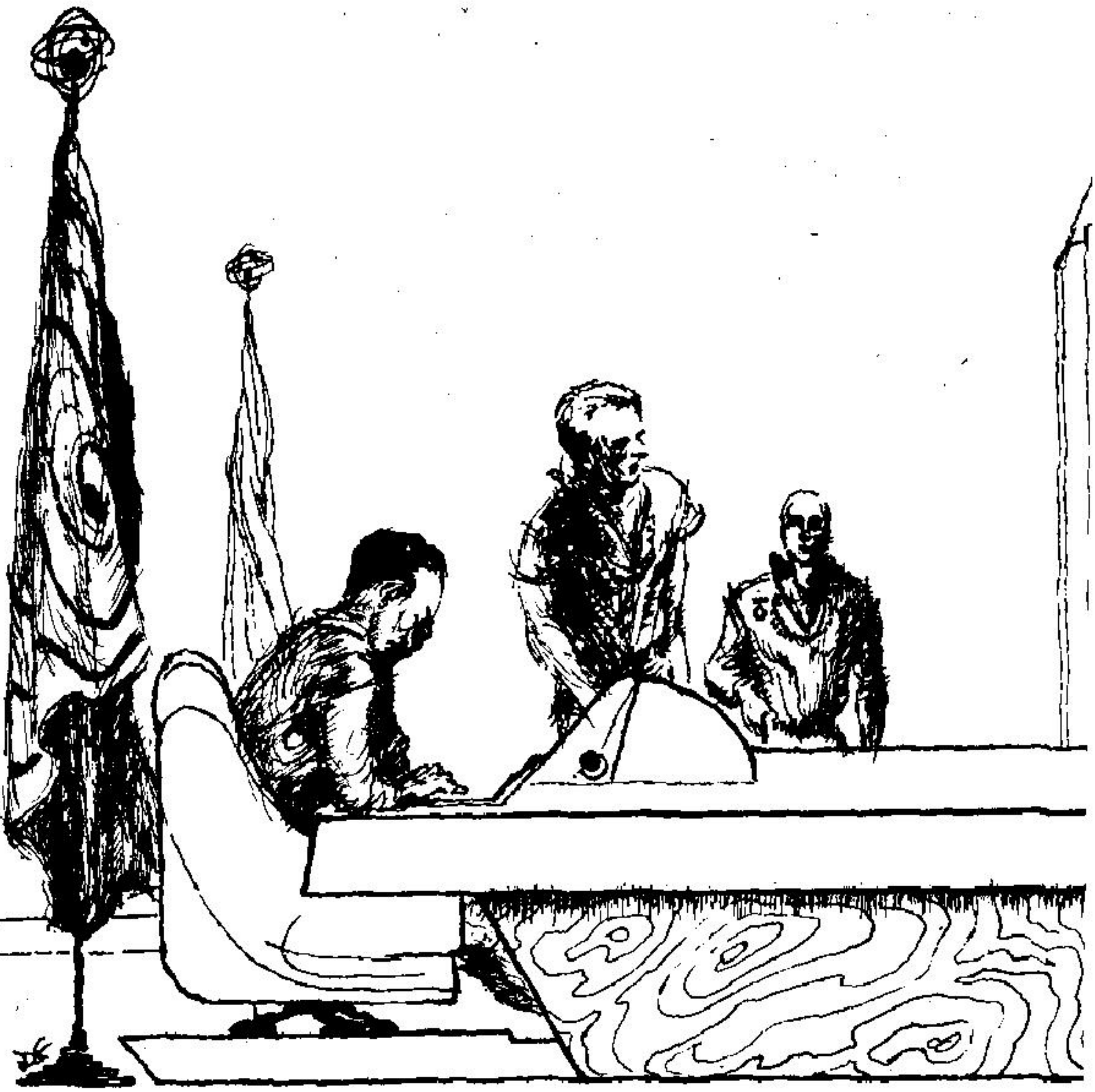
creature withdrew the leg as soon as it was decently possible, and smiled a bit as he concluded that their aversion was mutual.

The Gnii stepped back and began waving his two front legs.

"He is asking for your reply to his ultimatum," the small bald man interpreted.

"Tell him I'll give him a definite decision tomorrow," President Wong said. "Apologize for my not being able to reply today, and point out that since it will take him thirty-three years to get home, one day will not make much difference."

The bald interpreter waved his hands. The four Gnii went into a small huddle, waving their spi-



dery legs at each other. Then the leader turned to the interpreter again and "spoke."

"They say that they agree," the interpreter said. "But they want to emphasize that it is not because they fear the power of the Solar System."

The Gnii leader hesitated a moment, then extended his leg again. President Wong pumped it once. The Gnii dropped his hand and turned and left the room, with the three others and the interpreter filing after him.

"If you don't need me any more," the Manager of Trade said, glancing at his watch, "I'll go back to the Trade Bureau. I have a meeting with a number

of the department heads."

President Wong nodded tiredly. "I have the tapes. I'll study all your positions tonight."

THE Manager of Trade and the Manager of Foreign Affairs rose and left the room. The Manager of Defense stayed in his seat.

"If you feel up to it," Al said, "the Manager of Defense would appreciate it if you would present a Presidential citation to the remains of the Third Company. They were involved in a police action in the system of Veganea, and their morale is shattered. As you know, the award is traditional, as is the speech. Here's the text—all you need do is read it."

"All right," President Wong said, taking the paper from Al's hand and scanning it. There was only one paragraph.

The door opened and four old men entered, followed by an honor guard of eight husky privates. They approached the desk and stood at attention. President Wong looked up from the speech and felt a wave of sudden nausea. For a second, he was afraid that he actually was going to be sick. None of their old lined faces was complete. The worst wounded had less than half a face, and that discolored by purple blotches of radiation scar-tissue. He was blind, and the others maneuvered him into position before the desk.

"For the heroic parts which you played in the Police Action against Veganea—" Wong stumbled over the name, then continued hastily— "I, the President of the Solar Union, hereby . . ."

"Rot," said the blind one, through toothless gums in a voice that was only a hoarse whisper. "Tell me, do you know where Veganea is? Does anyone on Earth know where Veganea is, or care? How many men, Mr. President, how many men, young and healthy, left for that police action? Do you know?" His hoarse voice rose. "Four came back . . . but can any of you gentlemen tell me *how many left?*"

"That's enough," the Manager of Defense said. At his signal, two of the honor guards gently took hold of the veteran's arms and walked him out of the room along with the others.

"I order that he not be punished," Wong said sharply.

"He won't be," the Manager of Defense said. "Do you take me for a barbarian? I had hoped, though, that your interest might change their attitude. As you can imagine, it's raising hell with the morale of the recruits."

"By the way," the President asked, "where is Veganea, and how many men *did* we send there?"

"It's about twenty-four years

away, near Vega. The action started before my time and I don't know how many men were involved—probably not more than a few million. The Police Action ended successfully, but our ships were in the first wave and were wiped out."

THE President sat down wearily. His hand strayed over to the order he had signed that morning for a police action, then drifted aimlessly away.

"What's next?" he asked Al. He slipped a few energy pills into his mouth as Al consulted his book.

"There's the matter of the conversion bomb," Al said. "The Manager of Scientific Research and the Manager of Defense would like you to make a decision about it."

"The conversion bomb?" President Wong said, puzzled. "I've never heard of it.'

"It is highest level top secret," the Manager of Defense explained. "Instead of breaking down atoms and releasing some energy as in the standard fission weapons, it converts matter entirely into energy. Given the matter-energy equation, the energy released by a small amount of matter is fantastic."

Al had risen and gone to the door. He returned with an old, gray-haired, stoop-shouldered man. The President recognized the famous Manager of Research.

The Manager launched immediately into his argument without preliminaries. "Mr. President, while my department has finally found a way to convert matter directly into energy, I believe that any use of this process would be disastrous. First, there is absolutely no safeguard that could prevent a matter-conversion powered machine, used for peaceful purposes, from being changed into a lethal weapon by the simplest of alterations. And as a weapon, the conversion bomb, unlike atomic bombs, could not only destroy planets but stars with their entire systems. We all know that the law of the Galaxy is to prevent its domination by any one system—and given the distances and populations involved, that domination is obviously impossible. But if we began to construct conversion bombs, and if word of it got out, the whole Galaxy would rise against us, all the way to the Edge."

"But, Mr. President," the Manager of Defense said calmly. "We are not a unique people. If we do not produce the conversion bomb, you may rest assured that someone else will. Maybe even our friends, the Gnii. No system has ever saved itself by refusing to manufacture the best weapons

# FIVE BIG SPECIAL CHRISTMAS OFFERS

***The gift that lasts a year***

Please fill out all information on the easy, self-mailing, addressed envelope opposite. Fold as indicated. Include your check. We will take care of the rest. This offer expires December 15, 1953.

**OFFER**

**1**

**GALAXY SUBSCRIPTION**

1 year—12 Big Issues—**$3.00**

Each additional gift subscription for one year

**$2.85**

**OFFER**

**2**

**FIRST**
**Beyond Subscription**

**6 Big Issues—$1.50**

Each additional subscription of 6 Issues

**$1.35 Each**

**OFFER**

**3**

**GALAXY** for one year—
12 Big Issues
**BEYOND** for 6 Big Issues
} **$4.35**

Each additional combination of this for

**$4.25**

**OFFER**

**4**

**GALAXY NOVELS**

6 different during the year—**$1.50**

Additional sets of six during the year

**$1.35**

**OFFER**

**5**

**Altogether Special Offer**

First of this Combination

**Galaxy 12—Beyond 6**
**And 6 Big Novels**

**$5.75**

Each additional gift of this combination

**$5.50**

**Fill Out Envelope**

available to it. As for the Galaxy rising against us—if we have the conversion bomb, let them! We will be able to defend ourselves against any or all of them and blast their suns into novae."

"Until *they* have the bomb," the Manager of Scientific Research interrupted. "As you say, we are not a unique people."

"Gentlemen," the President said, standing up suddenly. "I feel tired and dizzy. The idea of a bomb that can wipe out systems is new to me. If you will leave your tapes, I will study your arguments tonight, and we can resume this discussion tomorrow."

THE two Managers rose immediately, shook hands with the President, and left. They did not speak to each other as they went through the door.

"Mr. President," Al said, "it's seven o'clock. Will you join me for dinner, sir?"

President Wong slumped back into his seat and stared dully at Al, only half noticing his friendly grin. "What would you do about the Gnii, Al, if you were in my place?" he asked.

"I'm sorry, sir," Al said, "but I really don't know. Better come along for some dinner. You've had a hard day, and you have a harder one ahead of you tomorrow. We saved a number of difficult problems that we didn't want to throw at you on your first day in office."

A ghost of a smile crept over the President's face, then disappeared quickly. "It's all right, Al. Go ahead and eat. I think I'll just stay here and go over these tapes."

As Al left, President Wong saw the order for the police action on his desk. He picked it up to call Al to take it with him, but his eyes caught the words *500,000 men . . . sixteen years*, and a picture of the terribly wounded veterans flashed before his eyes. Really, he would have to go through the files and find out if the expedition was necessary . . .

He opened the left-hand desk drawer and stared at the Gnii tapes, but he didn't take any of them out. It seemed like too much of an effort.

And then, the conversion bomb was so much more important.

He closed the first drawer and opened the one with the conversion bomb tapes.

But the Gnii had to be answered tomorrow — the bomb could wait. He slammed the drawer shut.

"Gnii," he muttered to himself, and opened the other drawer.

Then he noticed that he had put the police action order back into his OUTGOING basket. He slammed the drawer with the Gnii

tapes shut again and opened the drawer below it and pushed the order inside, so that it wouldn't be picked up by mistake before he could check on it.

"Five hundred thousand men in here," he said as he closed the drawer. "Going to—"

Where were they supposed to go? He couldn't remember. He opened the drawer again and looked at the order. To Altair D. The name had no meaning for him.

Now, let's see . . . oh, yes, the conversion bomb tape.

He opened the drawer to take out the tapes, and remembered that the Gnii ultimatum had to be answered by tomorrow.

"Gnii, Gnu, Gnuts," he said, opening a drawer. It was the wrong one, and the tapes weren't there. Which tapes?

The door opened, and President Wong looked up to see Al's smiling face peering in.

"I was passing by, sir," Al said, "and I wondered if I couldn't talk you into supper—"

"*Get out!*" the President shouted.

The door closed softly.

Now where was he? . . . Oh, yes, the conversion bomb. Conversion, conversion, conversation, bomb, bomb, boom, *BOOM*. But that wasn't it either—it was the Gnii, they had to be answered by tomorrow . . . Gnii, Gnii, Gnu, Gnuts, now in what drawer had he put the gnats? And why order a police action against Gnats? Just convert every one of them into spiders . . .

AL walked slowly down the hall, his grin gone, his face looking washed out. He turned into his own little office and snapped on the communications video.

"First Vice-President Michael Thompson," he said to the operator.

In a moment Thompson appeared on the screen.

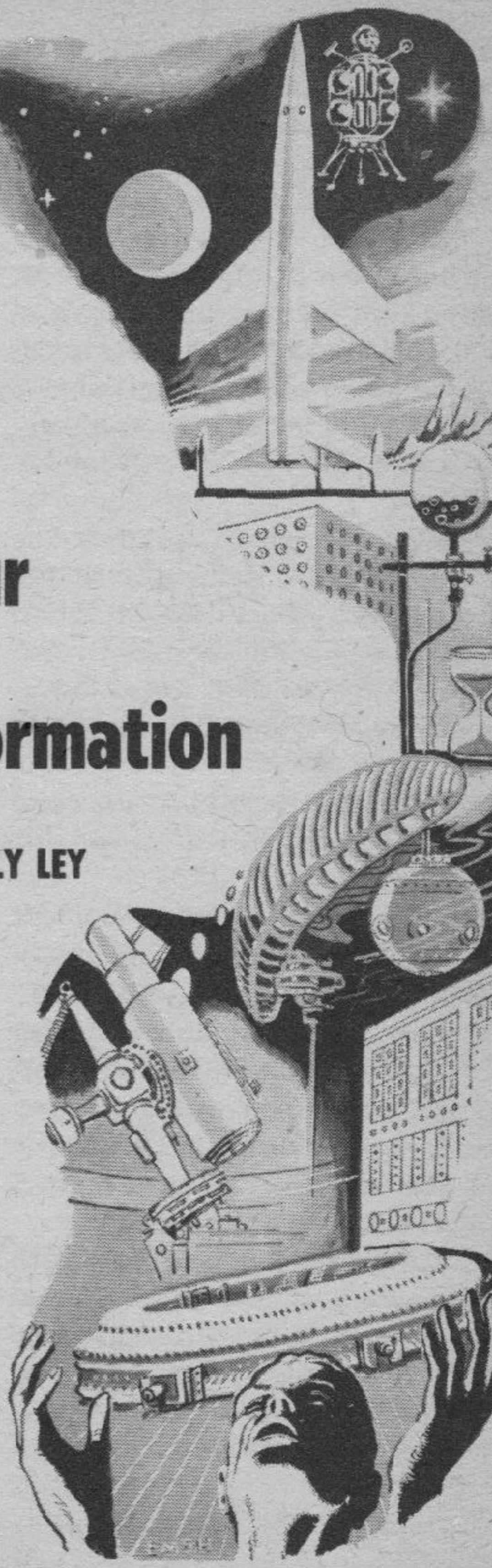
"Mr. First Vice-President," Al said in a tired voice, "may I suggest that you remain in the Capital for the next few weeks?"

Even though he knew that it was not polite, Al snapped off the set without waiting for a reply —but not before he caught the white and frightened look on Thompson's face.

—STEPHEN ARR

# For Your Information

By WILLY LEY



## IS ARTIFICIAL LIFE POSSIBLE?

EARLY this year, a young scientist, Stanley L. Miller of the University of Chicago, made an important discovery. Like many other scientific discoveries, it was exciting to the specialist who is aware of all the background, but needs a considerable amount of explanation for a layman to realize its significance.

What happened was that Mr. Miller tried to duplicate under glass the conditions which probably prevailed on Earth some two thousand million years ago. At that time, cosmological theory says, Earth's atmosphere must have been entirely different from what it is now. It was an atmosphere which every living thing of today, with the exception of certain bacteria, would find poisonous.

When the job of imitating the surface of the Earth before life began was done, it was found that some chemicals had formed in the process. Not surprising in itself, except that the chemicals were *amino acids*, which are the building blocks of *protein*—and that is the basis of life.

LET'S sit back for a moment and draw a kind of bookkeeping balance. To begin with, we have the undeniable fact that life does exist on Earth. Even half a century ago, it was known that, at some time in the past, life could not possibly have existed on Earth, for you can't have anything living on what amounted to a ball of lava. Therefore life on Earth must have started at some relatively specific time. After you had progressed so far in your reasoning, you had the simple theoretical choice of postulating that it originated on Earth in some manner from things we'd call "non-living," or that interplanetary and interstellar space is full of life spores which continuously fall on every planet and either perish or settle and multiply, if conditions permit them to do so.

At a later date—over three decades intervening—physicists began to work out how the Earth's surface must have looked after it had cooled, deriving a picture decidedly inimical to life, even though the excessive heat was gone. There would be no oxygen in the primeval atmosphere; that had all been oxidized away. There would be ammonia, carbon dioxide, carbon monoxide, methane gas and water, the latter in both forms, vapor and liquid. There would be, in addition to these material things, energy, sunlight with radiations of all wavelengths, from long radio waves down to X-rays, and probably electrical discharges.

When that environment was produced in the laboratory, it yielded amino acids!

Don't jump to conclusions at this point. Amino acids are as far removed from a complete, large and complex protein molecule as a pile of bricks is from a finished house. And a finished protein molecule, is a long—though unknown—distance from a living cell. The experimenters did not (as things are easily ex-

aggerated) make a living cell in Chicago, but merely substances which we now know to be sub-sub-assemblies of a cell.

Nor can one extrapolate from here on and say hopefully: Now that they have succeeded in creating the sub-sub-assembly from dead substances, next week (or month, or year) they'll get a few thousand amino acid molecules together and make a protein molecule. And the week (or month, or year) after that, they'll get a living cell. Even so—

But to make my thinking clear, let's assume that somebody, in the course of reproducing primevil. Earth environment, does obtain a living cell. There would then be just two possibilities:

1. It did happen in the way in which those amino acids happened. In that case, virtually the whole of the secret of life would still need to be investigated, because all we would know is that it happened (admittedly a good deal) and we would still have to find out how and why.

2. The researcher knew all the factors involved before hand, in which case the experiment would only have been the proof of a well-formulated and presumably complicated theory of life.

WE don't have such a theory of life. In spite of a really enormous amount of work performed during the last seventy or eighty years, we have trouble even *defining* life. At first a purely chemical definition was tried, until it was realized that analyzing protoplasm was like melting down and analyzing a locomotive to see why it works. Then followed a long period in which not the chemical nature, but the chemical (and physical) actions were taken to be the main criterion.

A favorite example was an ordinary egg—or, rather, two of them, one fertilized and the other not. They were obviously alike chemically, yet one developed into a chick and the other would rot after a while. And if somebody objected and said that fertilization therefore must have introduced a chemical change, you could point out some rather incredible things researchers had done with eggs, if not chicken eggs.

For the eggs of a sea urchin could be "fertilized" by brushing them with a medium-hard brush under water, or by sticking a needle into them—gently, of course. It worked with butterfly eggs, too. Now all this could do was to push some substance from the outer layers into the interior. The result was fertilization, decidedly without introducing a chemical change of the whole.

Well, all right, in which way

did a living thing act differently from a dead substance? First of all, it would eat and grow, by taking in substance from outside its body. Crystals also grow, but they have to be in a solution of the same chemical substance, while a living cell could digest and "assimilate" different substances. At the time, some philosophers objected that this was true not only of living beings. A candle flame "assimilated" the wax. That flames could grow and multiply and that they would leave behind the "indigestible" things which could not be assimilated, or only partly assimilated, did not need any special and elaborate proof. At a later date, chemists came up with the so-called autocatalytic compounds, substances which can also be said to "assimilate" other compounds.

So the definition by "action," even if well meant, could not be phrased sharply enough to be fully acceptable. A much more recent definition also works with "action" and has been condensed as follows:

A slab of beef is protein. A live animal is, too. Put them both on a board and tilt it. The steak will follow the laws of gravity; the live animal will fight back. Of course it may not succeed, but it will try.

You will have noticed that this discussion has wandered far afield, from what amounted to attempts to find a chemical formula for life, to the "intent" of fighting gravity. But this is merely an indication of the fact that we are dealing with a very complex problem which can be approached from many angles and somehow eludes a fine sharp definition.

IN the foregoing, a number of parallels have been mentioned. A crystal will grow like a living cell, but only if it has the chemicals which constitute it to feed on. An autocatalyst can go a step further. And a flame—a purely chemical process and a very simple one at that—not only seems to assimilate, but also to propagate.

Granted that the example of the flame is a superficial similarity, don't the other two indicate that there is no hard and fast borderline between living and non-living things? And didn't Dr. Wendell M. Stanley of the Rockefeller Institute for Medical Research in Princeton jump across this line one and a half decades ago when he succeeded in crystallizing a virus (the virus which produces the so-called mosaic disease of the tobacco plant) without killing it?

For those who did not read about it at that time, I'll briefly

explain that the crystals, to all intents and purposes, appeared to be as "dead" as beach sand or ground glass. Yet when they were put on the leaf of a tobacco plant, they caused the mosaic disease as if they had been subjected to no change of form.

Naturally the conclusion was drawn that not only the tobacco mosaic virus, but any virus belonged in that border area between living and dead matter. Since then, we have learned one very important fact about viruses. Besides differing from bacteria in being much smaller, they are also much more specialized in their demands. A bacterium can force its way into the cells of a bigger host and live there, or it can live outside a cell. A virus needs the environment of a living cell; in that, it is reminiscent of the crystals which can grow only in a very specific environment.

Now the question is: Is a virus actually such a borderline case which has not progressed all the way to the adaptability of truly living matter? Or is a virus a degenerated parasite which—like far larger and far more complex parasites high up in the ladder of evolution—has lost most of the adaptability it once possessed for the sake of the apparently easy life of a parasite?

Personally, I feel inclined to suspect the latter. But either explanation may be correct. I don't think anybody really knows yet.

That, unfortunately, is the note on which this little dissertation has to end. When it comes to questions like the suspected border area between living and non-living matter, our knowledge is simply insufficient to pass judgment.

And the Chicago experiment?

It has done two things. It has strengthened the supposition that life could originate on Earth after the planet cooled. It has opened up a new avenue of research which looks promising.

In time, the dramatic experiment might lead us to an understanding of what life really is. And after we have succeeded in understanding, the creation of artificial life would probably be a process of extension—protein molecule, cell, linked cells, and so forth, perhaps all the way up to synthetic human beings, the "androids" of science fiction. But the creating of amino acids is only the beginning of that long climb, analogous to Franklin's kite to attract lightning and the awesome complexity of modern electrical generation, power transmission and consumption.

The experiment shows us that it apparently can be done. If artificial life is created, however, it would just be the confirmation

of a theory that had been worked out beforehand.

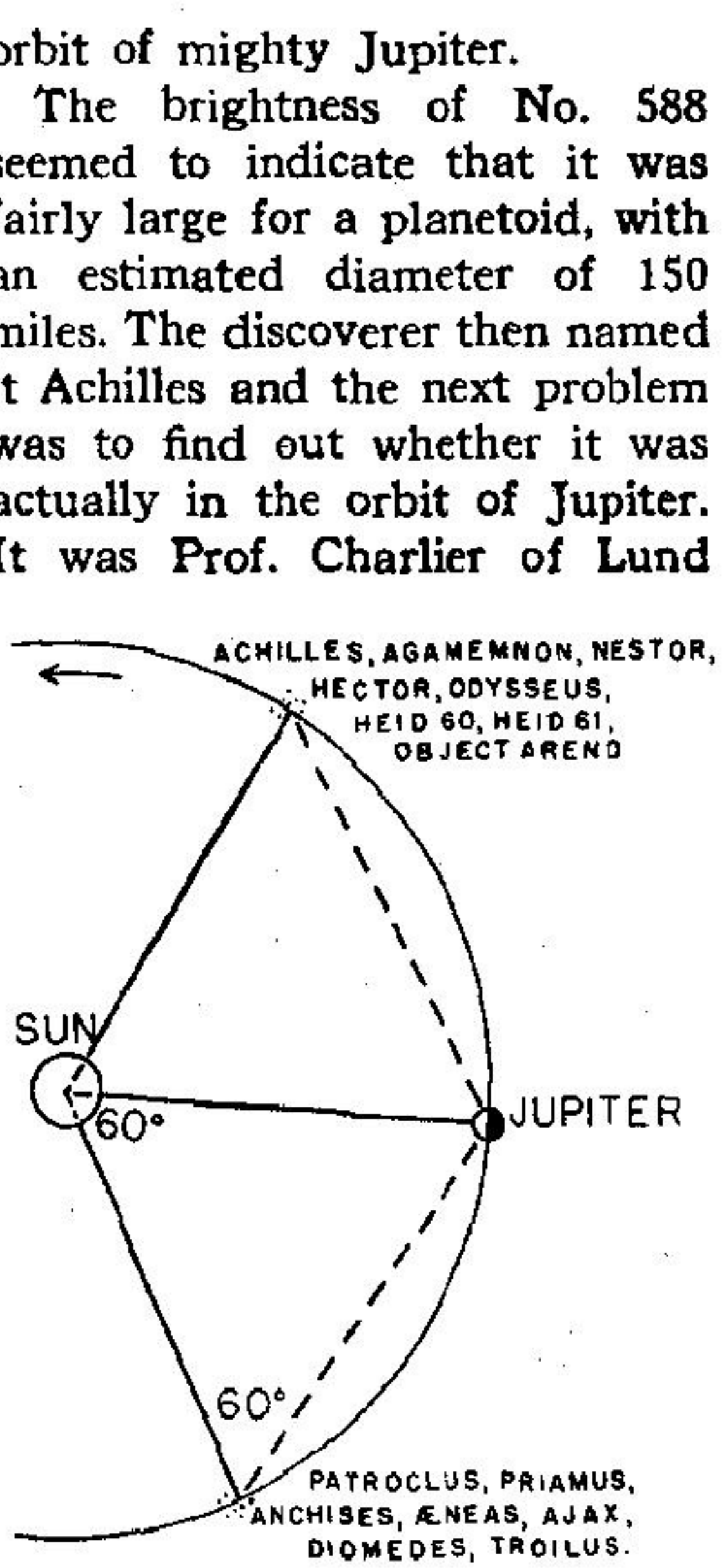
As you can see, we need the theory first. Only after we have that can anybody state whether artificial life is a definite likelihood. Until then, it remains a theoretical possibility, though a good one, I believe.

## THE TROJAN PLANETS

AS a result of a recent story involving the Trojan planets, several readers inquire what they are and whether they exist, and another wants to know if there is a minor planet named Agamemnon and where it is located.

The story of the Trojan planets began either in 1908 or in 1772, depending on your point of view. On February 22, 1908, Prof. Max Wolf discovered a minor planet in a place in the sky where none of the known minor planets (or planetoids) could be that night. Of course it might also be a new comet, so it was provisionally and noncommittally labeled *TG*. Observations of *TG* over a period of time made it likely that it was not a comet and the observations were mailed to Dr. Berberich in Berlin, head of the special computing section for minor planets. It turned out to be planetoid No. 588 and Dr. Berberich announced that it appeared to move in the orbit of mighty Jupiter.

The brightness of No. 588 seemed to indicate that it was fairly large for a planetoid, with an estimated diameter of 150 miles. The discoverer then named it Achilles and the next problem was to find out whether it was actually in the orbit of Jupiter. It was Prof. Charlier of Lund




Observatory who was the first to notice that the position of Achilles was some 55½ degrees ahead of Jupiter in its orbit.

That such a thing was possible at all had been predicted quite some time earlier, when Joseph Louis Lagrange had published an essay on "Three Bodies" in space and how they would move under the mutual gravitational attraction. That had been in 1772

and Lagrange had found mathematically that three bodies could form a stable system if they were arranged in the three corners of an equilateral triangle. The triangle, in this case, consisted of the Sun, Jupiter and Achilles.

During the same year, planetoid No. 617 was found and named Patroclus. It also formed an equilateral triangle with the Sun and with Jupiter, but in the other direction, since Patroclus trailed Jupiter in its orbit. And then it turned out that another new discovery, No. 624 (named Hector), was close to Achilles. Further observation showed that Achilles and Patroclus were members of small clusters of planetoids, one group moving ahead of Jupiter and one behind it. They were all named after heroes of the Trojan War, hence the general appellation of Trojan planets.

The trailing group comprises seven known planetoids. The leading group has five well-established members, to which the Germans have tentatively added three that, for the moment, do not yet bear classical names.

Since they are moving in this formation, the same set of figures applies to every one of them. They all move with an orbital velocity of 8.1 miles per second, need 11.86 years to go around the Sun once, and their average distance is 483 million miles. That is the distance of each group from the Sun and of each group from Jupiter and, of course, the distance of Jupiter from the Sun.

Because this is also a considerable distance from us, it is obvious that each group must have many more members than have been named, for at that distance we can find only comparatively large bodies. It is very likely that small ones, say a mile in diameter, move around in these clusters. A good deal of space débris is likely to be present, too.

The motions inside these clusters must be very interesting, but we know comparatively little about them. We don't actually have to go there to find out. This is one of the astronomical problems that could be solved by photographic observation from a space station.

At any event, the Trojan planets are as intriguing—though lacking the popular appeal—as the canals of Mars.

## ANY QUESTIONS?

*What are the oldest known fossils and how old are they?*

*Rita Eleftheriades*
*(address withheld)*
*New York City.*

**First let's get the chronology straight so that lack of explanation does not lead to misunderstandings.**

Prior to our own era, we had the Cenozoic Era, also called the Tertiary Period or the Age of Mammals, with a total duration of about 60 million years. Before that came the Mesozoic Era, also called the Age of Reptiles, with a total duration of about 135 million years, and, prior to that, the Paleozic Era with a total duration of 355 million years. Before that—still going backward — there was the Proterozoic Era and, before that, the Archeozoic Era, each estimated to have been 650 million years in duration.

For quite a number of years (but also quite a number of years ago), students were taught that a fossil from the Archeozoic was known—hemispherical masses, from a few inches to a few feet in diameter. The name given was *Eozoon canadense*, but although this means "the dawn animal from Canada," it was stated that they had probably been colonies of algae. But it is now believed that *Eozoon* is not a fossil at all. From the Proterozoic Era, a few doubtful fossils are known, one from Australia *(Protaledadia)* and one from the Grand Canyon *(Beltina danae)*, both believed to be early arthropods.

"Arthropods," in case anybody stumbles over the word, is the summary designation of crustaceans, insects, spiders, scorpions, centipedes and millipedes. Spicules of sponges from the Proterozoic of Grand Canyon are less doubtful than the supposed early arthropods, and the trails of an otherwise unknown wormlike animal from the Proterozoic of Glacier National Park are accepted.

The reason for the extreme scarcity of fossils from the first two Eras is twofold: One is the extreme age of these periods and the other is that most very primitive animals and plants do not have solid shells, bones or other structures which can fossilize.

With the first period (the Cambrian Period) of the Paleozoic Era, fossils become frequent.

*I have had some difficulty understanding what nebulae actually are. Are they composed of stars, cosmic dust or what? In connection with nebulae, I have heard the terms "planetary," "diffuse," "dark," "galactic" and "spiral." What do these terms mean?*

*Jarrell Fontenote*
1014 *Neches Drive*
*Port Neches, Texas*

Yes, the terminology is somewhat confusing.

In Latin, the word *nebula* means "vapor" or "smoke" and *nebulosus* means "clouded." This word was chosen because the appearance of some nebulae suggests vapor or clouds. All nebulae are grouped as either "galactic" or "extragalactic," the former belong to our own galaxy while the extragalactic nebulae are other galaxies.

The galactic nebulae are of three types: dark, diffuse and planetary.

Dark nebulae bear that name because they show up dark against a background of stars, many of which they obscure.

Diffuse nebulae are of irregular outline and shape and are probably visible only because of the light of nearby stars which they reflect.

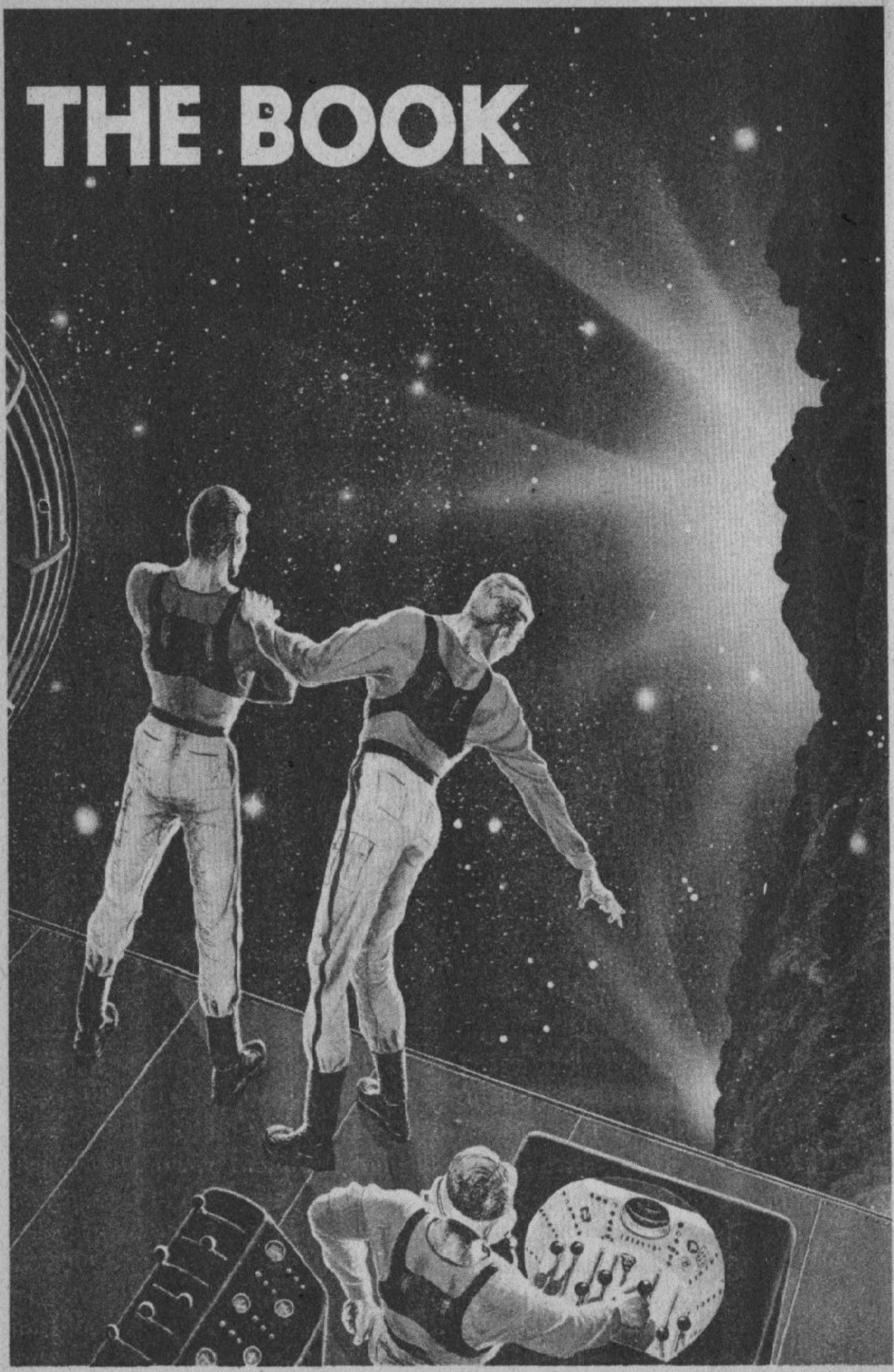
These two types, which might be essentially the same under different illumination, consist of gas molecules and dust particles.

The planetary nebulae have the most misleading name. They were originally called that because in the telescope they show a disk like a planet, while the stars show as points. They are the gaseous envelopes of certain stars, round or nearly round in shape and sharply defined.

The extragalactic nebulae are subdivided into two types, elliptical and spiral. The spirals are then subdivided once more into "normal spirals" and "barred spirals" and in each of the two spiral types, astronomers distinguish "early," "intermediate" and "late" forms. Since the elliptical extragalactics as well as the spirals are galaxies like our own, generally speaking, their light is due to the stars which compose them.

To round off the survey, I have to add that a number of "irregular" extragalactic nebulae are known and that there are many Q-type extragalactic nebulae. Q-type means too faint to be classified properly.

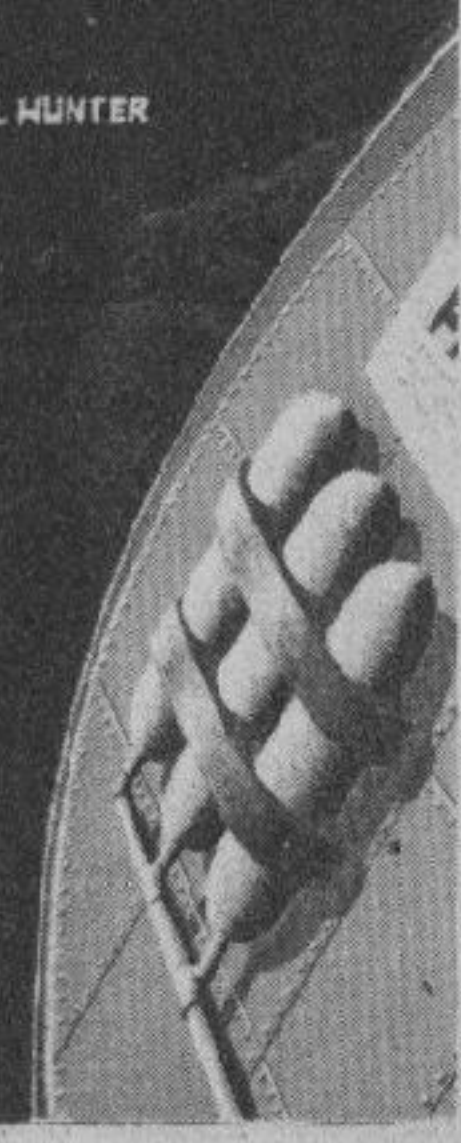
—WILLY LEY


THE BOOK

*A weird world—cut off from the Universe, it had universal wisdom; facing death at every moment, it had the secret of peace!*

# By MICHAEL SHAARA

BEAUCLAIRE was given his first ship at Sirius. He was called up before the Commandant in the slow heat of the afternoon, and stood shuffling with awkward delight upon the shaggy carpet. He was twenty-five years old, and two



months out of the Academy. It was a wonderful day.

The Commandant told Beauclaire to sit down, and sat looking at him for a long while. The Commandant was an old man with a face of many lines. He was old, was hot, was tired. He was also very irritated. He had reached that point of oldness when talking to a young man is an irritation because they are so bright and certain and don't know anything and there is nothing you can do about it.

"All right," the Commandant said, "there are a few things I have to tell you. Do you know where you are going?"

"No, sir," Beauclaire said cheerfully.

"All right," the Commandant said again, "I'll tell you. You are going to the Hole in Cygnus. You've heard of it, I hope? Good. Then you know that the Hole is a large dust cloud—estimated diameter, ten light-years. We have never gone into the Hole, for a number of reasons. It's too thick for light speeds, it's too big, and Mapping Command ships are being spread thin. Also, until now, we never thought there was anything in the Hole worth looking at. So we have never gone into the Hole. Your ship will be the first."

"Yes, sir," Beauclaire said, eyes shining.

"A few weeks ago," the Commandant said, "one of our amateurs had a lens on the Hole, just looking. He saw a glow. He reported to us; we checked and saw the same thing. There is a faint light coming out of the Hole —obviously, a sun, a star inside the cloud, just far enough in to be almost invisible. God knows how long it's been there, but we do know that there's never been a record of a light in the Hole. Apparently this star orbited in some time ago, and is now on its way out. It is just approaching the edge of the cloud. Do you follow me?"

"Yes, sir," Beauclaire said.

"Your job is this: You will investigate that sun for livable planets and alien life. If you find anything—which is highly unlikely—you are to decipher the language and come right back. A Psych team will go out and determine the effects of a starless sky upon the alien culture—obviously, these people will never have seen the stars."

THE Commandant leaned forward, intent now for the first time.

"Now, this is an important job. There were no other linguists available, so we passed over a lot of good men to pick you. Make no mistake about your qualifications. You are nothing

spectacular. But the ship will be yours from now on, permanently. Have you got that?"

The young man nodded, grinning from ear to ear.

"There is something else," the Commandant said, and abruptly he paused.

He gazed silently at Beauclaire —at the crisp gray uniform, the baby-slick cheek—and he thought fleetingly and bitterly of the Hole in Cygnus which he, an old man, would never see. Then he told himself sternly to leave off self-pity. The important thing was coming up, and he would have to say it well.

"Listen," he said. The tone of his voice was very strong and Beauclaire blinked. "You are replacing one of our oldest men. One of our best men. His name is Billy Wyatt. He—he has been with us a long time." The Commandant paused again, his fingers toying with the blotter on his desk. "They have told you a lot of stuff at the Academy, which is all very important. But I want you to understand something else: This Mapping Command is a weary business—few men last for any length of time, and those that do aren't much good in the end. You know that. Well, I want you to be very careful when you talk to Billy Wyatt; and I want you to listen to him, because he's been around longer than anybody. We're relieving him, yes, because he is breaking down. He's no good for us any more; he has no more nerve. He's lost the feeling a man has to have to do his job right."

The Commandant got up slowly and walked around in front of Beauclaire, looking into his eyes.

"When you relieve Wyatt, treat him with respect. He's been farther and seen more than any man you will ever meet. I want no cracks and no pity for that man. Because, listen, boy, sooner or later the same thing will happen to you. Why? Because it's too big—" the Commandant gestured helplessly with spread hands—"it's all just too damn big. Space is never so big that it can't get bigger. If you fly long enough, it will finally get too big to make any sense, and you'll start thinking. You'll start thinking that it doesn't make sense. On that day, we'll bring you back and put you into an office somewhere. If we leave you alone, you lose ships and get good men killed—there's nothing we can do when space gets too big. That is what happened to Wyatt. That is what will happen, eventually, to you. Do you understand?"

The young man nodded uncertainly.

"And that," the Commandant said sadly, "is the lesson for today. Take your ship. Wyatt

will go with you on this one trip, to break you in. Pay attention to what he has to say—it will mean something. There's one other crewman, a man named Cooper. You'll be flying with him now. Keep your ears open and your mouth shut, except for questions. And don't take any chances. That's all."

Beauclaire saluted and rose to go.

"When you see Wyatt," the Commandant said, "tell him I won't be able to make it down before you leave. Too busy. Got papers to sign. Got more damn papers than the chief has ulcers."

The young man waited.

"That, God help you, is all," said the Commandant.

WYATT saw the letter when the young man was still a long way off. The white caught his eye, and he watched idly for a moment. And then he saw the fresh green gear on the man's back and the look on his face as he came up the ladder, and Wyatt stopped breathing.

He stood for a moment blinking in the sun. *Me?* he thought . . . *me?*

Beauclaire reached the platform and threw down his gear, thinking that this was one hell of a way to begin a career.

Wyatt nodded to him, but didn't say anything. He accepted the letter, opened it and read it. He was a short man, thick and dark and very powerful. The lines of his face did not change as he read the letter.

"Well," he said when he was done, "thank you."

There was a long wait, and Wyatt said at last: "Is the Commandant coming down?"

"No, sir. He said he was tied up. He said to give you his best."

"That's nice," Wyatt said.

After that, neither of them spoke. Wyatt showed the new man to his room and wished him good luck. Then he went back to his cabin and sat down to think.

After 28 years in the Mapping Command, he had become necessarily immune to surprise; he could understand this at once, but it would be some time before he would react. *Well, well,* he said to himself; but he did not feel it.

Vaguely, flicking cigarettes onto the floor, he wondered *why*. The letter had not given a reason. He had probably flunked a physical. Or a mental. One or the other, each good enough reason. He was 47 years old, and this was a rough business. Still, he felt strong and cautious, and he knew he was not afraid. He felt good for a long while yet . . . but obviously he was not.

*Well, then,* he thought, *where now?*

He considered that with interest. There was no particular place for him to go. Really no place. He had come into the business easily and naturally, knowing what he wanted—which was simply to move and listen and see. When he was young, it had been adventure alone that drew him; now it was something else he could not define, but a thing he knew he needed badly. He had to see, to watch . . . and *understand*.

It was ending, the long time was ending. It didn't matter what was wrong with him. The point was that he was through. The point was that he was going home, to nowhere in particular.

When evening came, he was still in his room. Eventually he'd been able to accept it all and examine it clearly, and had decided that there was nothing to do. If there was anything out in space which he had not yet found, he would not be likely to need it.

He left off sitting, and went up to the control room.

COOPER was waiting for him. Cooper was a tall, bearded, scrawny man with a great temper and a great heart and a small capacity for liquor. He was sitting all alone in the room when Wyatt entered.

Except for the pearl-green glow of dashlights from the panel, the room was dark. Cooper was lying far back in the pilot's seat, his feet propped up on the panel. One shoe was off, and he was carefully pressing buttons with his huge bare toes. The first thing Wyatt saw when he entered was the foot glowing luridly in the green light of the panel. Deep within the ship he could hear the hum of the dynamos starting and stopping.

Wyatt grinned. From the play of Coop's toes, and the attitude, and the limp, forgotten pole of an arm which hung down loosely from the chair, it was obvious that Coop was drunk. In port, he was usually drunk. He was a lean, likable man with very few cares and no manners at all, which was typical of men in that Command.

"What say, Billy?" Coop mumbled from deep in the seat.

Wyatt sat down. "Where you been?"

"In the port. Been drinkin' in the goddam port. Hot!"

"Bring back any?"

Coop waved an arm floppily in no particular direction. "Look around."

The flasks lay in a heap by the door. Wyatt took one and sat down again. The room was warm and green and silent. The two men had been together long enough to be able to sit without

speaking, and in the green glow they waited, thinking. The first pull Wyatt took was long and numbing; he closed his eyes.

Coop did not move at all. Not even his toes. When Wyatt had begun to think he was asleep, he said suddenly:

"Heard about the replacement."

Wyatt looked at him.

"Found out this afternoon," Coop said, "from the goddam Commandant."

Wyatt closed his eyes again.

"Where you goin'?" Coop asked.

Wyatt shrugged. "Plush job."

"You got any plans?"

Wyatt shook his head.

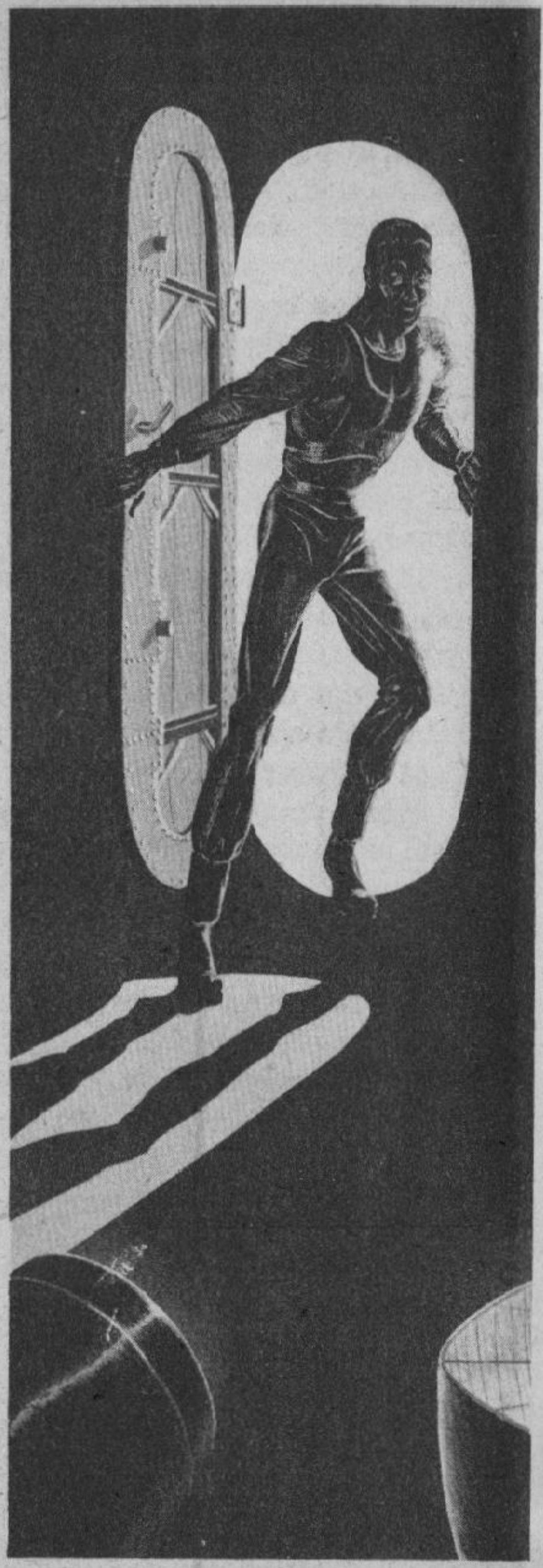
Coop swore moodily. "Never let you alone," he muttered. "Miserable bastards." He rose up suddenly in the chair, pointing a long matchstick finger into Wyatt's face. "Listen, Billy," he said with determination, "you was a good man, you know that? You was one hell of a good goddam man."

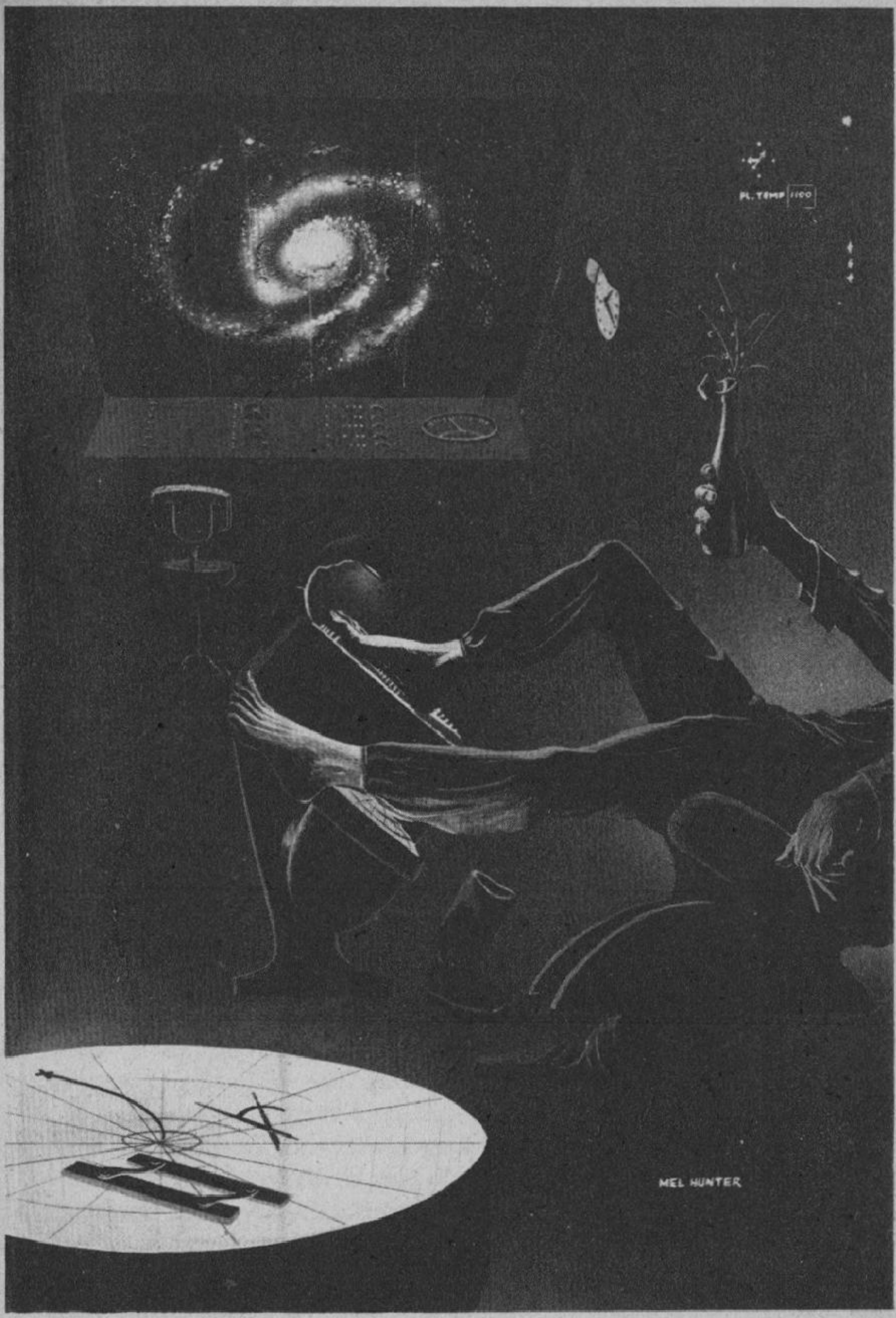
Wyatt took another long pull and nodded, smiling.

"You said it," he said.

"I sailed with some good men, some *good* men," Coop insisted, stabbing shakily but emphatically with his finger, "but you don't take nothin' from nobody."

"Here's to me, I'm true blue," Wyatt grinned.




PL. TEMP 1100
MEL HUNTER

COOP sank back in the chair, satisfied. "I just wanted you should know. You been a good man."

"Betcher sweet life," Wyatt said.

"So they throw you out. *Me* they keep. *You* they throw out. They got no brains."

Wyatt lay back, letting the liquor take hold, receding without pain into a quiet world. The ship was good to feel around him, dark and throbbing like a living womb. *Just like a womb,* he thought. *It's a lot like a womb.*

"Listen," Coop said thickly, rising from his chair. "I think I'll quit this racket. What the hell I wanna stay in this racket for?"

Wyatt looked up, startled. When Coop was drunk, he was never a little drunk. He was always far gone, and he could be very mean. Wyatt saw now that he was down deep and sinking; that the replacement was a big thing to him, bigger than Wyatt had expected. In this team, Wyatt had been the leader, and it had seldom occurred to him that Coop really needed him. He had never really thought about it. But now he let himself realize that, alone, Coop could be very bad. Unless this new man was worth anything and learned quickly, Coop would very likely get himself killed.

Now, more than ever, this replacement thing was ridiculous; but for Coop's sake, Wyatt said quickly:

"Drop that, man. You'll be on this ship in the boneyard. You even look like this ship—you got a bright red bow."

When the tall man was dark and silent, Wyatt said gently, "Coop. Easy. We leave at midnight. Want me to take her up?"

"Naw." Coop turned away abruptly, shaking his head. "T'hell with you. Go die." He sank back deeply in the seat, his gaunt face reflecting the green glow from the panel. His next words were sad, and, to Wyatt, very touching.

"Hell, Billy," Coop said wearily, "this ain' no fun."

Wyatt let him take the ship up alone. There was no reason to argue about it. Coop was drunk; his mind was unreachable.

At midnight, the ship bucked and heaved and leaped up into the sky. Wyatt hung tenuously to a stanchion by a port, watched the night lights recede and the stars begin blooming. In a few moments the last clouds were past, and they were out in the long night, and the million million speckled points of glittering blue and red and silver burned once more with the mighty light which was, to Wyatt, all that was real or had ever meant living. In

the great glare and the black he stood, as always, waiting for something to happen, for the huge lonely beauty to resolve itself to a pattern and descend and be understood.

It did not. It was just space, an area in which things existed, in which mechanized substance moved. Wondering, waiting, Wyatt regarded the Universe. The stars looked icily back.

At last, almost completely broken, Wyatt went to bed.

BEAUCLAIRE'S first days passed very quickly. He spent them in combing the ship, seeking her out in her deepest layers, watching and touching and loving. The ship was to him like a woman; the first few days were his honeymoon. Because there is no lonelier job that a man can have, it was nearly always this way with men in the Command.

Wyatt and Cooper left him pretty much alone. They did not come looking for him, and the few times that he did see them he could not help but feel their surprise and resentment. Wyatt was always polite. Cooper was not. Neither seemed to have anything to say to Beauclaire, and he was wise enough to stay by himself. Most of Beauclaire's life until now had been spent among books and dust and dead, ancient languages. He was by nature a solitary man, and therefore it was not difficult for him to be alone.

On a morning some weeks after the trip began, Wyatt came looking for him. His eyes twinkling, Wyatt fished him up, grease-coated and embarrassed, out of a shaft between the main dynamos. Together they went up toward the astrogation dome. And under the great dome, beneath the massive crystal sheet on the other side of which there was nothing for ever and ever, Beauclaire saw a beauty which he was to remember as long as he lived.

They were nearing the Hole in Cygnus. On the side which faces the center of the Galaxy the Hole is almost flat, from top to bottom, like a wall. They were moving in on the flat side now, floating along some distance from the wall, which was so huge and incredible that Beauclaire was struck dumb.

It began above him, light-years high. It came down in a black, folding, rushing silence, fell away beneath him for millions upon millions of miles, passed down beyond sight so far away, so unbelievably far away and so vast, that there could be nothing as big as this, and if he had not seen the stars still blazing on either side he would have had to believe that the wall was just outside the glass, so close he could touch it. From all over the wall

a haze reflected faintly, so that the wall stood out in ridges and folds from the great black of space. Beauclaire looked up and then down, and then stood and gazed.

After a while, Wyatt pointed silently down. Beauclaire looked in among the folds and saw it, the tiny yellow gleam toward which they were moving. It was so small against the massive cloud that he lost it easily.

Each time he took his eyes away, he lost it, and had to search for it again.

"It's not too far in," Wyatt said at last, breaking the silence. "We'll move down the cloud to the nearest point, then we'll slow down and move in. Should take a couple of days."

Beauclaire nodded.

"Thought you'd like to see," Wyatt said.

"Thanks." Beauclaire was sincerely grateful. And then, unable to contain himself, he shook his head with wonder. "My God!" he said.

Wyatt smiled. "It's a big show."

Later, much later, Beauclaire began to remember what the Commandant had said about Wyatt. But he could not understand it at all. Sure, something like the Hole was incomprehensible. It did not make any sense—but so what? A thing as beautiful as that, Beauclaire thought, did not *have* to make sense.

THEY reached the sun slowly. The gas was not thick by any Earthly standards—approximately one atom to every cubic mile of space—but for a starship, any matter at all is too much. At normal speeds, the ship would hit the gas like a wall. So they came in slowly, swung in and around the large yellow sun.

They saw one planet almost immediately. While moving in toward that one they scanned for others, found none at all.

Space around them was absolutely strange; there was nothing in the sky but a faint haze. They were in the cloud now, and of course could see no star. There was nothing but the huge sun and the green gleaming dot of that one planet, and the endless haze.

From a good distance out, Wyatt and Cooper ran through the standard tests while Beauclaire watched with grave delight. They checked for radio signals, found none. The spectrum of the planet revealed strong oxygen and water-vapor lines, surprisingly little nitrogen. The temperature, while somewhat cool, was in the livable range.

It was a habitable planet.

"Jackpot!" Coop said cheerfully. "All that oxygen, bound to be some kind of life."

Wyatt said nothing. He was sitting in the pilot chair, his huge hands on the controls, nursing the ship around into the long slow spiral which would take them down. He was thinking of many other things, many other landings. He was remembering the acid ocean at Lupus and the rotting disease of Altair, all the dark, vicious, unknowable things he had approached, unsuspecting, down the years.

. . . So many years, that now he suddenly realized it was too long, too long.

Cooper, grinning unconsciously as he scanned with the telescope, did not notice Wyatt's sudden freeze.

It was over all at once. Wyatt's knuckles had gradually whitened as he gripped the panel. Sweat had formed on his face and run down into his eyes, and he blinked, and realized with a strange numbness that he was soaking wet all over. In that moment, his hands froze and gripped the panel, and he could not move them.

It was a hell of a thing to happen on a man's last trip, he thought. He would like to have taken her down just this once. He sat looking at his hands. Gradually, calmly, carefully, with a cold will and a welling sadness, he broke his hands away from the panel.

"Coop," he said, "take over."

Coop glanced over and saw. Wyatt's face was white and glistening; his hands in front of him were wooden and strange.

"Sure," Coop said, after a very long moment. "Sure."

Wyatt backed off, and Coop slid into the seat.

"They got me just in time," Wyatt said, looking at his stiff, still fingers. He looked up and ran into Beauclaire's wide eyes, and turned away from the open pity. Coop was bending over the panel, swallowing heavily.

"Well," Wyatt said. He was beginning to cry. He walked slowly from the room, his hands held before him like old gray things that had died.

THE ship circled automatically throughout the night, while its crew slept or tried to. In the morning they were all forcefully cheerful and began to work up an interest.

There were people on the planet. Because the people lived in villages, and had no cities and no apparent science, Coop let the ship land.

It was unreal. For a long while, none of them could get over the feeling of unreality, Wyatt least of all. He stayed in the ship and got briefly drunk, and then came out as carefully efficient as ever. Coop was gay and brittle. Only

Beauclaire saw the planet with any degree of clarity. And all the while the people looked back.

From the very beginning it was peculiar.

The people saw the ship passing overhead, yet curiously they did not run. They gathered in groups and watched. When the ship landed, a small band of them came out of the circling woods and hills and ringed the ship, and a few came up and touched it calmly, ran fingers over smooth steel sides.

The people were human.

There was not, so far as Beauclaire could tell, a single significant difference. It was not really extraordinary—similar conditions will generally breed similar races —but there was something about these men and women which was hard and powerful, and in a way almost grand.

They were magnificently built, rounded and bronzed. Their women especially were remarkably beautiful. They were wearing woven clothes of various colors, in simple savage fashions; but there was nothing at all savage about them. They did not shout or seem nervous or move around very much, and nowhere among them was there any sign of a weapon. Furthermore, they did not seem to be particularly curious. The ring about the ship did not increase. Although several new people wandered in from time to time, others were leaving, unconcerned. The only ones among them who seemed at all excited were the children.

Beauclaire stood by the viewscreen, watching. Eventually Coop joined him, looking without interest until he saw the women. There was one particular girl with shaded brown eyes and a body of gentle hills. Coop grinned widely and turned up the magnification until the screen showed nothing but the girl. He was gazing with appreciation and making side comments to Beauclaire when Wyatt came in.

"Looka *that,* Billy," Coop roared with delight, pointing. "Man, we have come home!"

WYATT smiled very tightly, changed the magnification quickly to cover the whole throng around them.

"No trouble?"

"Nope," Coop said. "Air's good, too. Thin, but practically pure oxygen. Who's first to go out?"

"Me," Wyatt said, for obvious reasons. He would not be missed.

No one argued with him. Coop was smiling as Wyatt armed himself. Then he warned Wyatt to leave that cute little brown-eyed doll alone.

Wyatt went out.

The air was clear and cool.

There was a faint breeze stirring the leaves around him, and Wyatt listened momentarily to the far bell-calls of birds. This would be the last time he would ever go out like this, to walk upon an unknown world. He waited for some time by the airlock before he went forward.

The ring of people did not move as he approached, his hand upraised in what the Mapping Command had come to rely on as the universal gesture of peace. He paused before a tall, monolithic old man in a single sheath of green cloth.

"Hello," he said aloud, and bowed his head slowly.

From the ship, through the wide-angle sights of a gun, Beauclaire watched breathlessly as Wyatt went through the pantomime of greeting.

None of the tall people moved, except the old man, who folded his arms and looked openly amused. When the pantomime was done, Wyatt bowed again. The old man broke into a broad grin, looked amiably around at the circle of people, and then quite suddenly bowed to Wyatt. One by one the people, grinning, bowed.

Wyatt turned and waved at the ship, and Beauclaire stood away from his gun, smiling.

It was a very fine way to begin.

IN the morning Wyatt went out alone, to walk in the sun among the trees, and he found the girl he had seen from the ship. She was sitting alone by a stream, her feet cooling and splashing in the clear water.

Wyatt sat down beside her. She looked up, unsurprised, out of eyes that were rich and grained like small pieces of beautiful wood. Then she bowed, from the waist. Wyatt grinned and bowed back.

Unceremoniously he took off his boots and let his feet plunk down into the water. It was shockingly cold, and he whistled. The girl smiled at him. To his surprise, she began to hum softly. It was a pretty tune that he was able to follow, and after a moment he picked up the harmony and hummed along with her. She laughed, and he laughed with her, feeling very young.

*Me Billy,* he thought of saying, and laughed again. He was content just to sit without saying anything. Even her body, which was magnificent, did not move him to anything but a quiet admiration, and he regarded himself with wonder.

The girl picked up one of his boots and examined it critically, clucking with interest. Her lovely eyes widened as she played with the buckle. Wyatt showed her how the snaps worked and she

was delighted and clapped her hands.

Wyatt brought other things out of his pockets and she examined them all, one after the other. The picture of him on his ID card was the only one which seemed to puzzle her. She handled it and looked at it, and then at him, and shook her head. Eventually she frowned and gave it definitely back to him. He got the impression that she thought it was very bad art. He chuckled.

The afternoon passed quickly, and the sun began to go down. They hummed some more and sang songs to each other which neither understood and both enjoyed, and it did not occur to Wyatt until much later how little curiosity they had felt. They did not speak at all. She had no interest in his language or his name, and, strangely, he felt all through the afternoon that talking was unnecessary. It was a very rare day spent between two people who were not curious and did not want anything from each other. The only words they said to each other were goodbye.

Wyatt, lost inside himself, plodding, went back to the ship.

IN the first week, Beauclaire spent his every waking hour learning the language of the planet. From the very beginning he had felt an unsettling, peculiar manner about these pople. Their behavior was decidedly unusual. Although they did not differ in any appreciable way from human beings, they did not act very much like human beings in that they were almost wholly lacking a sense of awe, a sense of wonder. Only the children seemed surprised that the ship had landed, and only the children hung around and inspected it. Almost all the others went off about their regular business—which seemed to be farming—and when Beauclaire tried learning the language, he found very few of the people willing to spend time enough to teach him.

But they were always more or less polite, and by making a pest of himself he began to succeed. On another day when Wyatt came back from the brown-eyed girl, Beauclaire reported some progress.

"It's a beautiful language," he said as Wyatt came in. "Amazingly well-developed. It's something like our Latin—same type of construction, but much softer and more flexible. I've been trying to read their book."

Wyatt sat down thoughtfully and lit a cigarette.

"Book?" he said.

"Yes. They have a lot of books, but *everybody* has this one particular book—they keep it in a place of honor in their houses.

i've tried to ask them what it is—I think it's a bible of some kind—but they just won't bother to tell me."

Wyatt shrugged, his mind drifting away.

"I just don't understand them," Beauclaire said plaintively, glad to have someone to talk to. "I don't get them at all. They're quick, they're bright, but they haven't the damnedest bit of curiosity about *anything*, not even each other. My God, they don't even gossip!"

Wyatt, contented, puffed quietly. "Do you think not seeing the stars has something to do with it? Ought to have slowed down the development of physics and math."

Beauclaire shook his head. "No. It's very strange. There's something else. Have you noticed the way the ground seems to be sharp and jagged almost everywhere you look, sort of chewed up as if there was a war? Yet these people swear that they've never had a war within living memory, and they don't keep any history so a man could really find out."

When Wyatt didn't say anything, he went on:

"And I can't see the connection about no stars. Not with these people. I don't care if you can't see the roof of the house you live in, you still have to have a certain amount of curiosity in order to stay alive. But these people just don't give a damn. The ship landed. You remember that? Out of the sky come Gods like thunder—"

WYATT smiled. At another time, at any time in the past, he would have been very much interested in this sort of thing. But now he was not. He felt himself — remote, sort of — and he, like these people, did not particularly give a damn.

But the problem bothered Beauclaire, who was new and fresh and looking for reasons, and it also bothered Cooper.

"Damn!" Coop grumbled as he came stalking into the room. "Here you are, Billy. I'm bored stiff. Been all over this whole crummy place lookin for you. Where you been?" He folded himself into a chair, scratched his black hair broodingly with long, sharp fingers. "Game o' cards?"

"Not just now, Coop," Wyatt said, lying back and resting.

Coop grunted. "Nothin to do, nothin to do." he swiveled his eyes to Beauclaire. "How you comin, son? How soon we leave this place? Like Sunday afternoon all the time."

Beauclaire was always ready to talk about the problem. He outlined it now to Cooper again, and Wyatt, listening, grew very tired. There is just this one continent,

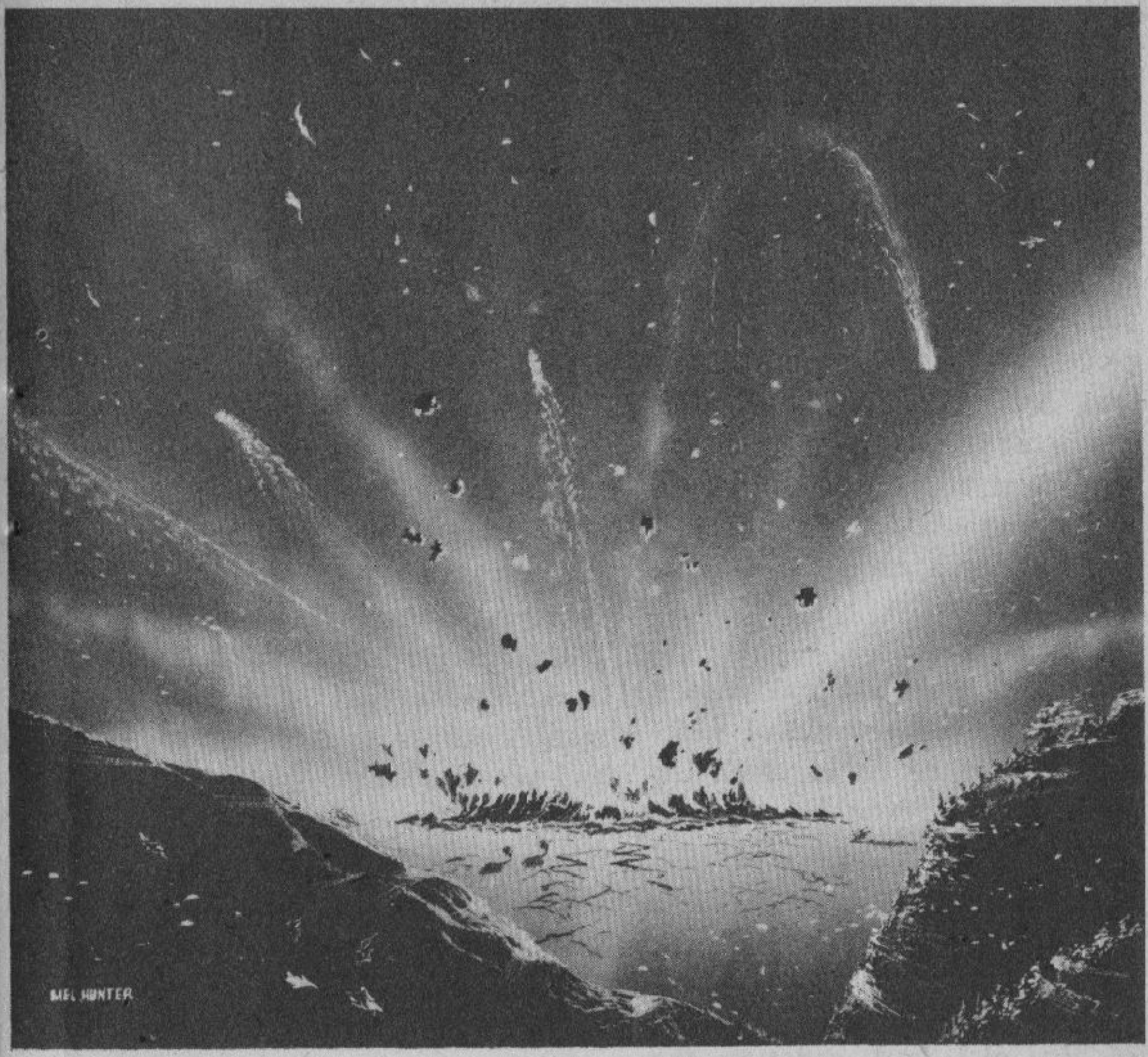
Beauclaire said, and just one nation, and everyone spoke the same tongue. There was no government, no police, no law that he could find. There was not even, as far as he could tell, a system of marriage. You couldn't even call it a society, really, but dammit, it existed—and Beauclaire could not find a single trace of rape or murder or violence of any kind. The people here, he said, just didn't give a damn.

"You said it," Coop boomed. "I think they're all whacky."

"But happy," Wyatt said suddenly. "You can see that they're happy."

"Sure, they're happy," Coop chortled. "They're nuts. They got funny looks in their eyes. Happiest guys I know are screwy as—"

The sound which cut him off, which grew and blossomed and eventually explained everything,




had begun a few seconds ago, too softly to be heard. Now suddenly, from a slight rushing noise, it burst into an enormous, thundering scream.

They leaped up together, horrified, and an overwhelming, gigantic blast threw them to the floor.

THE ground rocked, the ship fluttered and settled crazily. In that one long second, the monstrous noise of a world collapsing grew in the air and filled the room, filled the men and everything with one incredible, crushing, grinding shock.

When it was over there was another rushing sound, farther away, and another, and two more tremendous explosions; and though all in all the noise lasted for perhaps five seconds, it was the greatest any of them had ever heard, and the world beneath

them continued to flutter, wounded and trembling, for several minutes.

Wyatt was first out of the ship, shaking his head as he ran to get back his hearing. To the west, over a long slight rise of green and yellow trees, a vast black cloud of smoke, several miles long and very high, was rising and boiling. As he stared and tried to steady his feet upon the shaking ground, he was able to gather himself enough to realize what this was.

Meteors.

He had heard meteors before, long before, on a world of Aldebaran. Now he could smell the same sharp burning disaster, and feel the wind rushing wildly back to the west, where the meteors had struck and hurled the air away.

In that moment Wyatt thought of the girl, and although she meant nothing to him at all—none of these people meant anything in the least to him—he began running as fast as he could toward the west.

Behind him, white-faced and bewildered, came Beauclaire and Cooper.

When Wyatt reached the top of the rise, the great cloud covered the whole valley before him. Fires were burning in the crushed forest to his right, and from the lay of the cloud he could tell that the village of the people was not there any more.

He ran down into the smoke, circling toward the woods and the stream where he had passed an afternoon with the girl. For a while he lost himself in the smoke, stumbling over rocks and fallen trees.

Gradually the smoke lifted, and he began running into some of the people. Now he wished that he could speak the language.

They were all wandering quietly away from the site of their village, none of them looking back. Wyatt could see a great many dead as he moved, but he had no time to stop, no time to wonder. It was twilight now, and the sun was gone. He thanked God that he had a flashlight with him; long after night came, he was searching in the raw gash where the first meteor had fallen.

He found the girl, dazed and bleeding, in a cleft between two rocks. He knelt and took her in his arms. Gently, gratefully, through the night and the fires and past the broken and the dead, he carried her back to the ship.

IT had all become frighteningly clear to Beauclaire. He talked with the people and began to understand.

The meteors had been falling since the beginning of time, so the

people said. Perhaps it was the fault of the great dust-cloud through which this planet was moving; perhaps it was that this had not always been a one-planet system—a number of other planets, broken and shredded by unknown gravitational forces, would provide enough meteors for a very long time. And the air of this planet being thin, there was no real protection as there was on Earth. So year after year the meteors fell. In unpredictable places, at unknowable times, the meteors fell, like stones from the sling of God. They had been falling since the beginning of time. So the people, the unconcerned people, said.

And here was Beauclaire's clue. Terrified and shaken as he was, Beauclaire was the kind of man who saw reason in everything. He followed this one to the end.

In the meantime, Wyatt nursed the girl. She had not been badly hurt, and recovered quickly. But her family and friends were mostly dead now, and so she had no reason to leave the ship.

Gradually Wyatt learned the language. The girl's name was ridiculous when spoken in English, so he called her Donna, which was something like her real name. She was, like all her people, unconcerned about the meteors and her dead. She was extraordinarily cheerful. Her features were classic, her cheeks slim and smiling, her teeth perfect. In the joy and whiteness of her, Wyatt saw each day what he had seen and known in his mind on the day the meteors fell. Love to him was something new. He was not sure whether or not he was in love, and he did not care. He realized that he needed this girl and was at home with her, could rest with her and talk with her, and watch her walk and understand what beauty was; and in the ship in those days a great peace began to settle over him.

When the girl was well again, Beauclaire was in the middle of translating the book—the bible-like book which all the people seemed to treasure so much. As his work progressed, a striking change began to come over him. He spent much time alone under the sky, watching the soft haze through which, very soon, the stars would begin to shine.

He tried to explain what he felt to Wyatt, but Wyatt had no time.

"But, Billy," Beauclaire said fervently, "do you see what these people go through? Do you see how they live?"

Wyatt nodded, but his eyes were on the girl as she sat listening dreamily to a recording of ancient music.

"They live every day waiting,"

Beauclaire said. "They have no idea what the meteors are. They don't know that there is anything else in the Universe but their planet and their sun. They think that's all there is. They don't know why they're here—but when the meteors keep falling like that, they have only one conclusion."

WYATT turned from the girl smiling absently. None of this could touch him. He had seen the order and beauty of space, the incredible perfection of the Universe, so often and so deeply that, like Beauclaire, he could not help but believe in a Purpose, a grand final meaning. When his father had died of an insect bite at Oberon he had believed in a purpose for that, and had looked for it. When his first crewmate fell into the acid ocean of Alcestis and the second died of a horrible rot, Wyatt had seen purpose, purpose; and each time another man died, for no apparent reason, on windless, evil useless worlds, the meaning of things had become clearer and clearer, and now in the end Wyatt was approaching the truth, which was perhaps that none of it mattered at all.

It especially did not matter now. So many things had happened that he had lost the capacity to pay attention. He was not young any more; he wanted to rest, and upon the bosom of this girl he had all the reason for anything and everything he needed.

But Beauclaire was incoherent. It seemed to him that here on this planet a great wrong was being done, and the more he thought of it the more angry and confused he became. He went off by himself and looked at the terrible wound on the face of the planet, at all the sweet, lovely, fragrant things which would never be again, and he ended by cursing the nature of things, as Wyatt had done so many years before. And then he went on with the translation of the book. He came upon the final passage, still cursing inwardly, and reread it again and again. When the sun was rising on a brilliant new morning, he went back to the ship.

"They had a man here once," he said to Wyatt, "who was as good a writer as there ever was. He wrote a book which these people use as their Bible. It's like our Bible sometimes, but mostly it's just the opposite. It preaches that a man shouldn't worship anything. Would you like to hear some of it?"

Wyatt had been pinned down and he had to listen, feeling sorry for Beauclaire, who had such a long way to go. His thoughts were on Donna, who had gone out alone to walk in the woods

and say goodbye to her world. Soon he would go out and bring her back to the ship, and she would probably cry a little, but she would come. She would come with him always, wherever he went.

"I have translated this the best way I could," Beauclaire said thickly, "but remember this. This man could write. He was Shakespeare and Voltaire and all the rest all at once. He could make you *feel*. I couldn't do a decent translation if I tried forever, but please listen and try to get what he means. I've put it in the style of Ecclesiastes because it's something like that."

"All right," Wyatt said.

BEAUCLAIRE waited for a long moment, feeling this deeply. When he read, his voice was warm and strong, and something of his emotion came through. As Wyatt listened, he found his attention attracted, and then he felt the last traces of his sadness and weariness fall away.

He nodded, smiling.

These are the words Beauclaire had gathered from the Book:

Rise up smiling, and walk with me. Rise up in the armor of thy body and what shall pass shall make thee unafraid. Walk among the yellow hills, for they belong to thee. Walk upon grass and let thy feet descend into soft soil; in the end when all has failed thee the soil shall comfort thee, the soil shall receive thee and in thy dark bed thou shalt find such peace as is thy portion.

In thine armor, hear my voice. In thine armor, hear. Whatsoever thou doest, thy friend and thy brother and thy woman shall betray thee. Whatsoever thou dost plant, the weeds and the seasons shall spite thee. Whereso-ever thou goest, the heavens shall fall upon thee. Though the nations shall come unto thee in friendship thou art curst. Know that the Gods ignore thee. Know that thou art Life, and that pain shall forever come into thee, though thy years be without end and thy days without sleep, even and forever. And knowing this, in thine armor, thou shalt rise up.

Red and full and glowing is thy heart; a steel is forging within thy breast. And what can hurt thee now? In thy granite mansion, what can hurt thee ever? Thou shalt only die. Therefore seek not redemption nor forgiveness for thy sins, for know that thou hast never sinned.

Let the Gods come unto *thee*.

When it was finished, Wyatt sat very still.

Beauclaire was looking at him intently.

Wyatt nodded. "I see," he said.

"They don't ask for anything," Beauclaire said. "No immortality, no forgiveness, no happiness. They take what comes and don't —wonder."

Wyatt smiled, rising. He looked at Beauclaire for a long while, trying to think of something to say. But there was nothing to say. If the young man could believe this, here and now, he would save himself a long, long, painful journey. But Wyatt could not

talk about it — not just yet.

He reached out and clapped Beauclaire gently upon the shoulder. Then he left the ship and walked out toward the yellow hills, toward the girl and the love that was waiting.

*WHAT will they do,* Beauclaire asked himself, *when the stars come out? When there are other places to go, will these people, too, begin to seek?*

They would. With sadness, he knew that they would. For there is a chord in Man which is plucked by the stars, which will rise upward and outward into infinity, as long as there is one man anywhere and one lonely place to which he has not been. And therefore what does the meaning matter? We are built in this way, and so shall we live.

Beauclaire looked up into the sky.

Dimly, faintly, like God's eye peeking through the silvery haze, a single star had begun to shine.

—MICHAEL SHAARA

---

# Forecast

With Plainclothesman Baley in graver danger than ever, and the Spacers holding the threat of retaliation over Earth's head, THE CAVES OF STEEL by Isaac Asimov concludes next month with a chilling revelation . . . and a blinding burst of hope. But what a bitterly paradoxical hope! The hunt for a killer is always tense enough, but knowing that the fate of a world depends on the solution—the solution that must be exactly found and sprung or it's worse than none at all—would daunt any man. Yet Baley is inexorably forced to find and spring his solution in exactly the wrong way!

If he keeps it to himself, he will be declassified, replaced by a robot, and the Spacers will relentlessly move in. If he reveals it, the only result can be chaos!

THE CAVES OF STEEL is a study of threat to a society; Alan Nourse's THE DARK DOOR is a novelet-length analysis of pure distillate of personal terror. Wise as you are to the methods of infiltration, you wouldn't believe this one—it's too preposterous. But you'll meet and flee from it just the same!

There's a fine, likable chap whom Theodore Sturgeon calls MR. COSTELLO, HERO . . . a man who can't help worrying about every human being on all the worlds and in the ships between them. It takes real heroism to be willing to help people even if it has to be over their dead bodies!

# Unbegotten child

By WINSTON MARKS

*If this was true, there ought to be another edition of What Every Young Girl Should Know!*

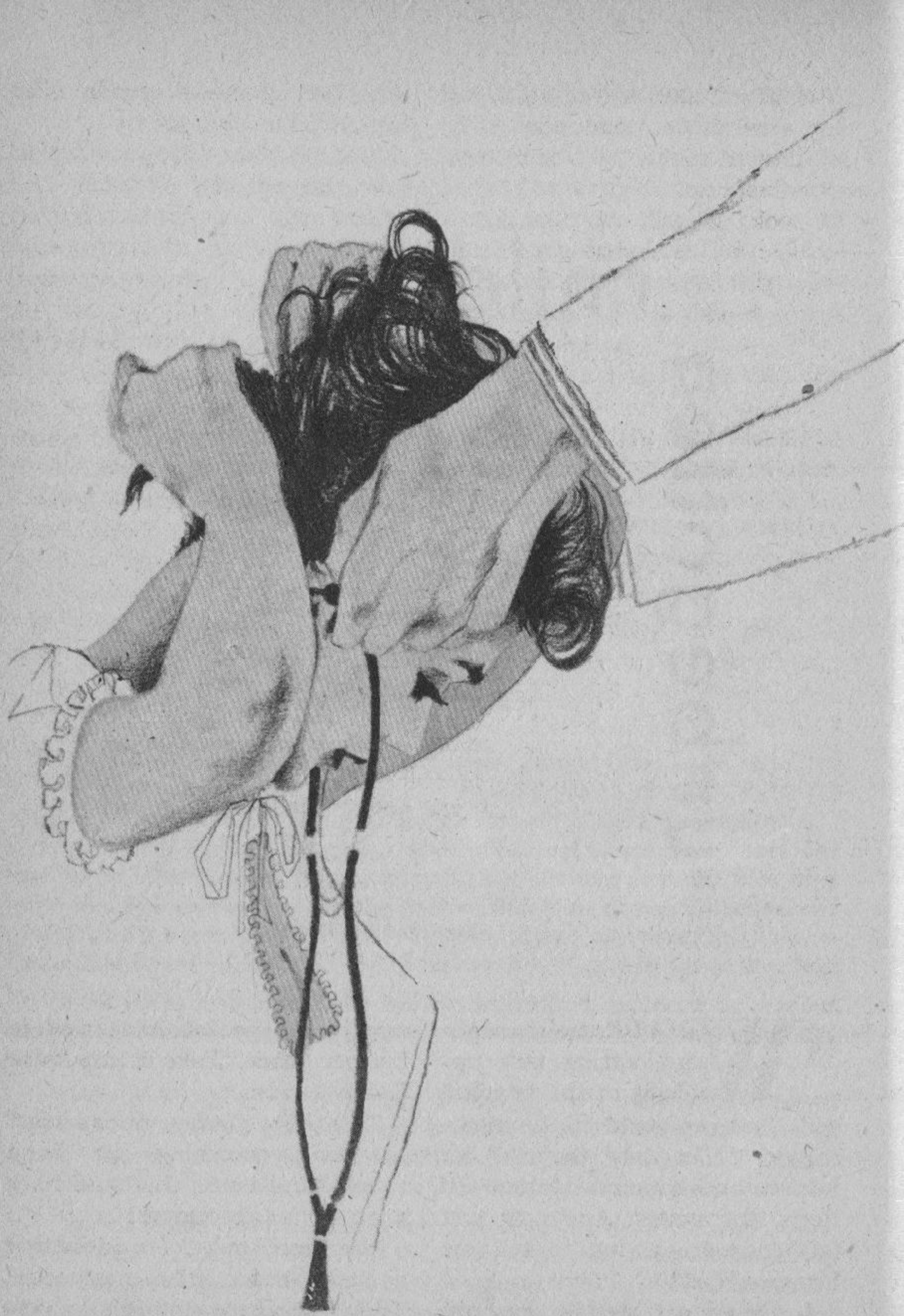
Illustrated by VIDMER

"WHAT," she demanded, sitting bolt upright in the hospital bed, "has happened to the medical world? In Italy, they tell me I have an abdominal tumor. In Paris, it's cancer. And now you fat-heads are trying to tell me I'm pregnant!"

I stuffed my stethoscope into my jacket pocket and tried to pat her hand. "Take it easy, Mrs. Caffey—"

"It's *Miss Caffey*, damn you," she said snatching her hand away, "and better I should have gone to an astrologer!"

"See here, now," I said, letting a stern note enter my voice. "You came here requesting a ver-



ification of the malignancy of this growth. Our discovery of a six month foetus is a fact, not an accusation."

"Look, Buster, I'm a thirty-six-year-old spinster. Like the joke goes, I haven't been married *or anything*. Also, I knew about the birds and the bees before you were emptying bedpans. Now will you get off this subject of babies and find out whether it's safe for me to start any continued stories?"

SUCH protestations from unmarried mothers were not uncommon, but Sara Caffey's cold convictions were unshakable. She sank back into her seven satin pillows and sighed mightily. Her wide-spaced, intelligent eyes glared at me from a handsome, if somewhat overly strong, face. Creamy white shoulders swept gracefully into gradually darkening neck skin and frankly tanned cheeks and broad forehead. Her straight, slender nose was sunburned.

As resident physician for over fifteen years, I had learned patience in these matters. But the thought that this lovely creature expected me to believe that she was an unfulfilled old maid got under my skin, particularly under the circumstances.

"Miss Caffey, I am a physician, not a philosopher. Just the same, permit me to congratulate you on your virginity."

"Thanks," she said, in a voice not untinged with pride.

"However," I went on, "in spite of certain contra-indications and irregularities of symptoms such as the absence of morning sickness and the like, I would like to enlist your cooperation in delivering yourself of an infant within the next three months."

"Dr. Foley, please understand!" She threw her hands apart in despair. "I love children. I would have an acre of them if I were married, or even in the mood for any other alliance. But men just don't fit my frame of reference. And regardless of what kind of a damned fool I may make of myself in the future, I haven't, to date! Doctor, the kind of cooperation you ask for hasn't been known for two thousand years."

I tried another tack. "Well, since you arrived without a medical history on your condition, would you tell us the name of your last doctor so we may write for a transcript?"

"Phillipe Sansome, in Paris."

"The surgeon?"

She nodded. "And don't try to explain that he misdiagnosed because he's hungry for surgical fees. He didn't plan to operate. In fact, that's why I left. He was

trying some new cure of his own that didn't set well with the staff there, and they got into such a squabble I figured I'd better remove the cause of it all before the dear old man lost his license."

While she was speaking, I casually drew back the covers and exposed her slightly swollen abdomen. It, too, had a surprising coat of tan. I donned my stethoscope, moved the diaphragm around until I had what I wanted, and held it there.

"Yes, I know of Dr. Sansome," I told her. "We shall send a wire at once for your case record. Helps, you know. Now, if you will just slip these into your ears—"

She let me hang the stethoscope around her neck, and even brushed back her shining black hair so I could adjust the earpieces for her.

"If Doctor Sansome had heard that," I said, "he would have changed his mind."

She listened intently to the quick, light, foetal heartbeat for over a minute, and gradually a faraway gleam lighted her eyes. "Oh if you were only right," she said softly, "Here I've chased stories all over the globe half my life, and I'd have the biggest story since the flood right here in my own tummy!"

She lay back again. "But of course, you're wrong."

"Then what do you call the sounds you've just heard?" I said in complete exasperation.

"Gut rumble," she said. "Now go along like a nice intern and find me a passel of surgeons and let's have at this tumor, cancer, bubble-gum or what have you. I want out of here, fast as I can mend."

THERE was no reason to keep the female news-correspondent in bed, but she wouldn't stir. She was confident that Phillipe Sansome's findings would convince us. Three days passed with no word from Paris. Then, on the fourth day, her medical history arrived in the briefcase of the famous surgeon himself.

"I flew," he apologized, "but it took two days to detach myself. Delighted to meet you, Dr. Foley. Your cable mentioned a Miss Sara Caffey, maternity patient. Is it *possible?*"

He was large for a Frenchman, and his gauntness was compounded by an obvious lack of sleep. His black eyes bore into mine as if to drag out what appeared to me to be a fairly mundane admission.

"We call her that," I said shrugging. "And as to her condition, you may examine her yourself."

"*Sacre bleu!*" His eyes rolled up like bloodshot cue-balls. "She

left us at her own insistence. Aside from ethics, we must not disturb her by my reappearance. But I have a favor to ask. A giant mountain of a fantastic favor. Now that I have found her again, I must not lose her, certainly not, until—"

He grabbed pen and paper and moved his chair to my desk. He wrote briefly. "*Voila!* These simple adjustments in her metabolism—diet, and just a few so petite injections. And may I remain here in the behind-ground, incognito? I will help with other work—at no cost, of course. I will be an orderly, if you will. But I must remain in touch. Close touch."

I was a bit nonplussed. A man of Sansome's reputation! It was like a United States Senator pleading for the opportunity to scrub out the men's room at the House of Representatives. Just the same, I wouldn't be stampeded or overawed. Several provocative explanations for the French doctor's concern came to mind . . . Was he the repudiated father of Sara's unborn child? Or was he a practitioner of artificial insemination, with a rather unfortunate error to his credit?

"Your request is unusual," I said cautiously, "but not entirely unreasonable. In order to justify it, I am sure you will be willing to explain your interest in this case, will you not, Doctor?"

HE frowned, "I suppose I must. But you will believe little of it. My own staff agreed with my diagnosis, but they violently rejected my theory. Wait until they hear *your* diagnosis, doctor!" He unzipped his briefcase. "She probably protests that she has a malignant tumor, not a baby," he remarked as he laid thick sheafs of paper on my desk.

"You are so very right," I said.

"Madamoiselle is magnificent," he observed, running slender, wrinkled hands through his sparse gray hair. "But her obstinacy will not avail against evolution. No more than we doctors' monumental ignorance."

"Evolution? Explain, please."

"Here is the case history." He drummed on it with his short-clipped nails. "In it, you will find that Caffey came to us three months ago with her body cavity in the grasp of a small octopus of a soft form carcinoma. The pain reached from pelvis to chest."

"Incredible!" I exclaimed.

Sansome spread his hand on the record sheets. "Facts are never incredible," he reminded me gently. "What follows, however, will tax your credulity, and I beg of you to allow me to impose an outrageous concept whose

only virtue appears to be its demonstrated validity."

"Proceed."

"In forty years of slicing away tumerous growths, I had become morbid at the dreadful incidence of recurrence and the obscene mortality rate. In spite of all our techniques, these cancers have increased with the persistence of Nature herself.

"In a fit of prolonged depression brought on by a foolishly strenuous research of histories, my mind stumbled into a stupid preoccupation with a few isolated cases of exogenic pregnancy. One which fascinated me was the young 17-year-old boy from whose lung a surgeon removed a live three-month foetus. Somehow the obvious explanation refused to satisfy me. It was, of course, concluded that the foetus was an undeveloped twin to the boy himself.

"This *could* be so; but on what facts was this assumption based? None. Only the absence of any other theory justified the concept. The surgeon had expected to find a hard carcinoma.

"And it came to me suddenly that *he had found his cancer!*

"My interpolation was this: Mankind is suffering an evolutionary change in his reproductive procedure. The high incidence of various tumors evidences Nature's experiments in developing a sexual reproduction."

SANSOME'S statement so flabbergasted me that I looked at him for signs of facetiousness or irrationality. His extreme fatigue was evident—but his calmness and clarity of self-expression in a foreign language indicated no mental confusion. A hoax of such magnitude was outside the realm of possibility for a surgeon of his distinction.

The man was simply following a blind alley of reasoning, set off by his life-long frustration of battling cancer.

I mustered my patience and drew him out, hoping he would find a contradiction in his own theory.

"This is a rather staggering notion, Dr. Sansome," I said. "Have you been able to support it with —additional evidence?"

"Until Miss Caffey," he said, "frankly, no. Not the kind of evidence that is acceptable. But the theory has much to defend it. In your own Journal of the A. M. A., May 7, 1932, Dr. Maud Slye published the first solid evidence that predisposition to so-called malignant tumor is hereditary. Is this not a better characteristic of a true mutation, rather than of a disease?"

"Perhaps," I said. "But how does Mother Nature justify the

desirability of a change from our present rather successful bisexual system? And isn't she being rather cruel in her methods? Think of the millions she has made suffer in her experiments."

"Mother Nature," Sansome pronounced positively, "is neither kind nor cruel. She is manifestly indifferent to all but the goal of survival of the species. Our civilization has set out to thwart her with increasingly more effective methods of birth-control. In the light of survival, Nature is most justified in trying to bring millions of frustrated, childless humans to parenthood.

"MEANWHILE," he said, riffling the case history of Sara Caffey, "let us examine the evidence at hand. Our patient arrived in Paris positively cancerous. After confirming the diagnosis, I proposed an unprecedented treatment based on my theory. We know several body conditions which promote the rapid development of carcinoma, such as excess alkalinity and high blood sugar content and so forth. Instead of trying to reduce these and fight the tumor, I reversed the treatment and aided Miss Caffey's body to support and encourage its growth to what I predicted would be a new maturity.

"And what happened?" He threw up his hands. "In two months, the tendrils of the octopus withdrew into the central body of the tumor. The tendency to spread in search for attenuated nourishment was reversed with the treatment. This alone was an accomplishment, for it would have made the growth operable in a short time.

"Unfortunately, word of my unorthodox prescription reached a jealous colleague, and he set off such a quarrel at the Institute that Miss Caffey packed up and left with the generous misconception that she was saving me from embarrassment. I had no opportunity to assure her that the Cancer Institute would decide ultimately in my favor—which it shall when I return with a photostat of a certain birth certificate."

He smiled for the first time, and his charm was so powerful that I sincerely wanted to believe in him. I could see no use in denying him his request, for his prescriptions were of an innocuous nature for a normally pregnant woman such as Sara Caffey. I trusted that a normal birth of a typical baby would finally dissuade him.

I extended my hand again. "You are most welcome to stay with us, doctor," I told him. "The treatment you desire is within reason, and I admire your tenacity with your theory. I hope you

will forgive me, however, if I say that I find your premises rather tenuous. I feel that we will witness a very normal birth, and ultimately Miss Caffey will find it to her peace of mind to confess a secret marriage, or, at most—an alliance of which she may be pathologically ashamed at the moment."

Sansome grasped my hand with enthusiasm. "*Bien! Tres bien!*" he exclaimed. "This is more generous even than I expected. Certainly I do not expect a scientist of your station to swallow my theory at a gulp, Dr. Foley. I will admit that my persistence depends more than it should on intuition. But we shall see. I am grateful to you." And he kissed me firmly on each cheek.

A STUDY of Sansome's carefully prepared case history on Sara Caffey did disturb me a little. I ordered a thorough reexamination, and was left with some puzzling conclusions at the apparent absence of tumorous growth, malignant or otherwise.

Sara was enduring most of the classic symptoms of typical pregnancy, and was enjoying Dr. Sansome's treatment hugely. She guzzled the alkaline-producing fruit juices, fortified with carefully rationed dribbles of gin. She nibbled contentedly at the sweets which the Frenchman supplied anonymously. And she raised merry hell because we refused to operate.

After two weeks, she threatened to leave. I was paged over the P. A. and got to her room in time to catch her trying to zip up her skirt.

She looked at me impatiently, and then back to her abdomen. "Damned thing's getting out of hand."

She had on an expensive tweed suit, and the smart, powder-blue cashmere coat I helped her into made her look her role of distinguished world traveler, syndicated columnist and woman of parts.

She hunched her shoulders forward slightly, so the loose folds of the coat concealed her protruding middle.

"Thanks," she said casually. "I'll write you a check and be on my way."

"Dr. Sansome will be disappointed," I said casually.

"You heard from him?" she asked with interest.

I nodded.

She put her hands on her hips. "And you still persist with your fatuous idea that I'm going to have a baby?"

"Let us say," I evaded, "that we have adopted Dr. Sansome's treatment on a wait-and-see basis. You said yourself that he refused to operate. We have defi-

nitely confirmed that much. Your condition is still inoperable, but you are coming along fine."

"Well, now, why didn't you tell me that before." She threw off her coat and relieved the pressure of her waist zipper with a grateful sigh. "Now you're making sense. Send out for another Spillane. I'll go along with that. But no more of this drivel about transferring me to the maternity ward, see?"

TEN nights later, she changed her mind. I passed her room after a late emergency case. The door was open and I heard her crying softly to herself. I stopped in. Her bed lamp was on, and for a change she looked all woman.

I felt her pulse and asked, "What's the matter, Sara?"

"I'm going to have a baby!" she sobbed. "I've been feeling something peculiar for some time. But tonight it kicked the hell out of me."

"Want to talk about it?" I asked, still holding her wrist.

She looked at me with genuine bafflement in her eyes. Her face was puckered up like a hurt child's. "But it's so impossible, doctor. I'm sorry I talked to you the way I have, but so help me, I'm a good girl."

I almost said, *Well, these things happen,* but that would have sounded pretty silly. It was evident that she still wouldn't admit even to herself how and when it had happened.

"Ever go on a good binge?" I suggested.

"Not since I was sixteen," she exclaimed. "But I could use one right now. No, that might hurt the baby." She folded her arms protectively around her middle. "I don't get it. I don't get it at all. But if that's the way it is—" A crooked, pleased smile wrinkled tears from her cheeks. "Leave it to Sary to do things the unusual way."

She looked up at me. "Did you know I was the first white woman to interview a Rajah's harem eunuch?"

"Looks like you have a real story this time," I said, playing along with her.

"Yeah. But who in hell will write it?"

PHILLIPE Sansome made himself eminently useful. He assisted in surgery every morning, refusing fees and pleading with everyone to maintain his anonymity. The staff was in on the conspiracy, and the nurses smiled indulgently at him behind his back. But Sansome was too great a man to ridicule. The general feeling was the same as mine. He was older than he thought, not in body, but in over-tired

nerves and exhausted mind. None contested his skill with the scalpel; but none gave ten cents worth of credence to his twist on the theory of evolution.

As Sara's confinement proceeded with precise conformity to my expectations, I thought Sansome would lose heart—but he didn't. He arranged to be present in the delivery room with as much interest as if we expected a breach birth of a two-headed panda.

I was unfortunately called to Baltimore at the last minute. I flew both ways, but my haste was in vain. Sara gave birth while I was still aloft.

I checked in with more excitement than I'd thought possible. I asked at the desk, "How's Caffey."

"Fine. Gave birth an hour ago. Beautiful little girl—"

I didn't wait for more. I dashed upstairs to the maternity ward, where Sara had finally consented to be moved, and slipped into her room.

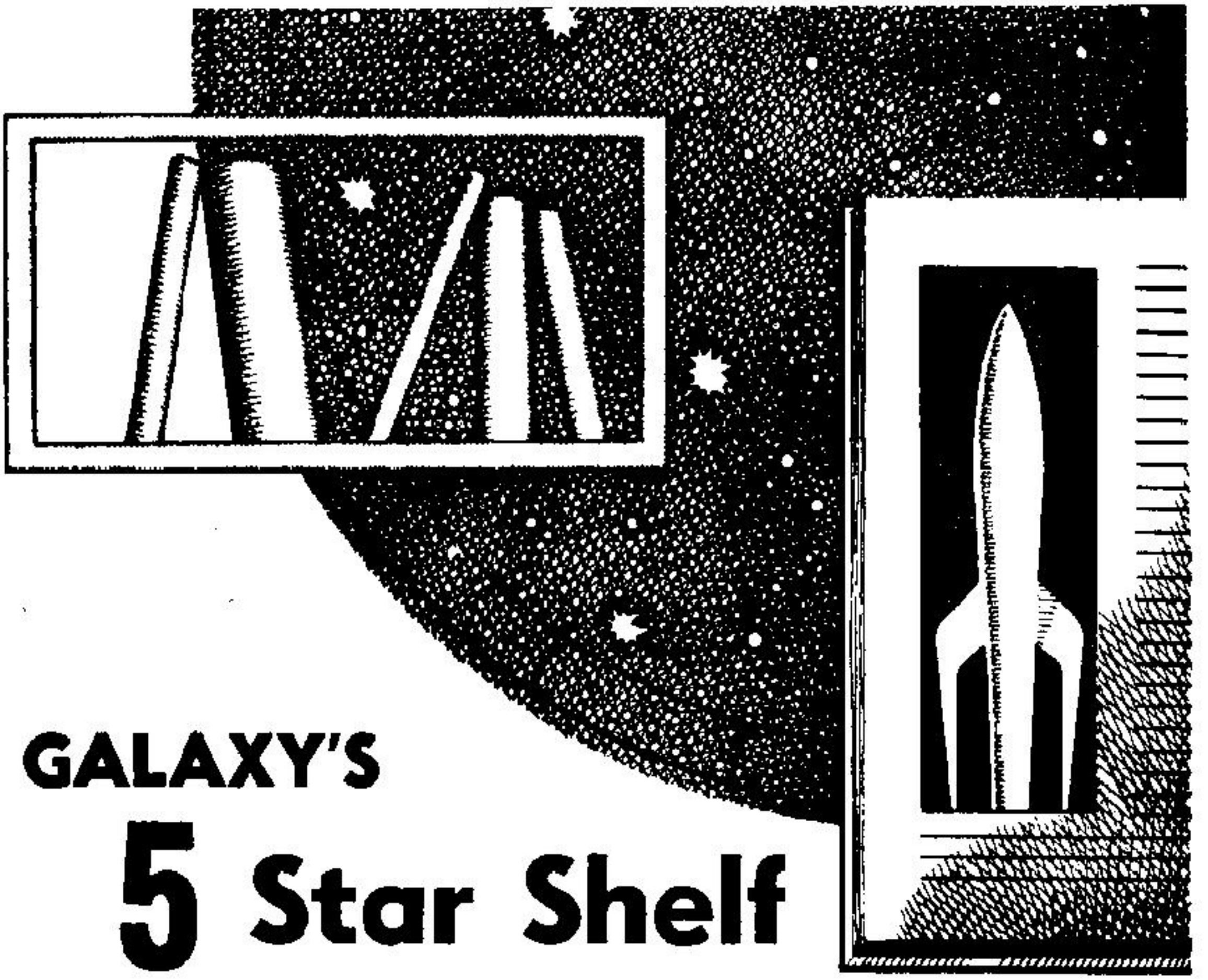
She was tired, but conscious. She smiled at me peculiarly.

"So it's a girl!" I exclaimed. "Wait until I see Sansome. A beautiful, healthy, normal baby!"

A hand tapped me softly on the shoulder, and I turned to look into Sansome's triumphant eyes.

"Without a navel," he said.

—WINSTON MARKS



GALAXY'S

# 5 Star Shelf

*TO THE END OF TIME: THE BEST OF OLAF STAPLEDON. Edited by Basil Davenport. Funk & Wagnalls Co., New York,* 1953. 790 *pages,* $5.00

THE science fiction event of 1953, for American readers, is the publication of this huge omnibus of five science fantasies by the late British writer Olaf Stapledon. For incomprehensible reasons, only one of the five novels has ever been published before in the United States: *Odd John*, the famous story of the mutant *homo superiors* and their ill-fated attempt to establish their own society on an island in the Pacific.

The other four are *Last and First Men*, Stapledon's weird and wonderful dream of the distant tomorrows of Man in the Universe; *Star Maker*, his vivid fantasy of travels among different life-forms in our galaxy; *Sirius*, a touching story of an intelligent dog and its reactions to the complexities of human civilization; and *The Flames*, a rather undistinguished short novel about a man in contact with the intelligences that inhabit fire.

Olaf Stapledon was a man possessed by the idea of Infinity,

an overwhelming pessimist, his whole life colored by preoccupation with "the tragic disorder of our whole terrestrial hive," as he put it. This combination of magnificently untrammeled imagination and a persistent sense of the futility of life resulted in some of the most off-trail science imaginings in fantastic literature.

Furthermore, as Basil Davenport points out in his pleasant Introduction, the novels are the original source of many of the current concepts in science fiction. The fuller and more circumstantial development of many of his ideas by other authors is not reprehensible in the least. For one of Stapledon's major defects was that he was a very bad novelist. His books are melanges of often undeveloped science fiction concepts and bombastic philosophizing. Today's writers frequently do the ideas they take from Stapledon a real favor by developing them more adequately.

However, despite its many faults, this is definitely not a book to be missed. It belongs with the science fiction classics.

*MAN IN SPACE by Heinz Haber. Illustrated by Jerry Milord. Bobbs Merrill Co., Inc., Indianapolis,* 1953. 291 *pages,* $3.75

IN the rapidly increasing bibliography of serious books on space travel, this excellent volume has a special value for the lay reader. It is the first popular book on the subject to emphasize the "condition of Man in space" rather than the spaceship *itself* and the engineering aspects of space travel.

Heinz Haber is one of the nation's foremost experts on "space medicine," the physiology and pathology of living things subjected to the unprecedented conditions encountered beyond the Earth's thin envelope of atmosphere. He is, therefore, almost uniquely competent to discuss the problems of Man in space, and in this volume he does so with authority and also with a pleasant clarity of style that makes his material very easy to absorb.

For those who want to know not only what it will be like to travel in space, but also how much we know about what it will be like, this book summarizes an enormous amount of experimentation (mostly military) on the effects of acceleration, weightlessness, lack of oxygen, cosmic radiation, and all the other problems of space flight —including some most of us never even dreamed of, such as the boiling of blood in the veins at low pressures.

Dr. Haber's final conclusion is that while none of the planets around our sun will support our existence, nor will they possess any intelligent life of their own, nevertheless Man will definitely "take to space"—if only to prove *that he can.*

Dr. Haber closes his book with a fine plea for the conservation of our Earth's resources and the continual improvement of its living conditions, since "colonization of the Solar System . . . is an utterly unrealistic, utopian idea."

I agree with Dr. Haber's conservationist sentiments wholeheartedly. But somehow I don't think we know enough about our own solar system—or our future in science—to make as dogmatic a statement as the one quoted. Like those who once said heavier-than-air flight was impossible, Dr. Haber may eventually be proved wrong.

*SECOND FOUNDATION by Isaac Asimov. Gnome Press, New York,* 1953. 210 *pages,* $2.75

WITH this volume, Asimov's *Foundation* trilogy is completed. Together with its two preceding volumes, also published by Gnome, it comprises our first great *sociological* space opera. Comparisons with E. E. Smith's six-volume *Lensman* series, the next-to-the-last volume of which is reviewed below, are natural, since the Smith opus is unquestionably one of the biggest pre-sociological space-mellers in science fiction history.

Both series engage in science extrapolations that are, to say the least, improbable; both are galactic or more in scope; both are tour de forces of the imagination. But Asimov's work, based as it is on fairly sound social principles and the activities of fairly normal human beings, has a pressing sense of reality that Smith's fairy tales lack all the way through.

This third volume contains the last two novellas Asimov has written on his subject: the story of the subjugation (by a member of the Second Foundation) of the Mule, that crippled mutant who nearly ruined Hari Seldon's psycho-historical matrix for the hastening of the organization of the Second Galactic Empire; and the tale of Arkady Darrell, Homir Munn, and the simple Preem Palver, and how they worked out the fragile plans of the Second Foundationeers (masters of mental science) to set the Galaxy on its correct track through the wildernesses of the future.

For my taste, it is a thoroughly satisfying and adult play of the scientific imagination.

*SECOND STAGE LENSMAN by Edward E. Smith, Ph.D. Fantasy Press, Reading, Pa., 1953. 307 pages, $3.00*

FOR over 25 years, E. E. Smith has been the beloved of young space opera addicts, for he is the inventor and sole producer of intergalactic melodrama on which most of the later imitations have been based. It is a real achievement, this invention, something that will live on for years as a classic of science fiction juvenalia.

Of course, it is pretty dull going for people who want a bit more than thud and blunder, irresistable forces conquering immovable objects, and a style reminiscent of the balloons in the s.f. comic strips.

In the present volume, Kimball Kinnison, dreamboat, Second Stage Lensman and whatnot, and his mighty crew of assistants of various shapes and planetary origins are still hunting down the Evil Powers that are attacking us from outside our Galaxy, and still failing to find the real villains, the Eddorians. They are still ridding the Universe of Boskonians instead, and a good thing, too—the vicious, sadistic drug-peddlers! And, in the end, Kim acquires his Clarrissa in holy matrimony—at last!

There is a foreword, too, that gives the reader a synopsis of the previous books in the series —excellent for orientation in the Smith fairyland.

*AGAINST THE FALL OF NIGHT by Arthur C. Clarke. Gnome Press, New York, 1953. 223 pages, $2.75*

ARTHUR Clarke, a man of many facets—he is the author of the only Book of the Month Club selection (non-fiction) on space travel—has here written a charming fantasy of the far-distant future, designed for boys and girls of all ages.

It deals with the adventures of young Alvin, a billion years from now, and his efforts to get the remnants of mankind on this planet out of the lethargy that near-immortality has given it.

First he escapes from the "prison of Diaspar," the city of perfection where only initiative is dead, and finds the rich rural civilization of Lys. Then, with the aid of some magical robots, he uncovers a million-year-old spaceship and takes off to find what else is left alive in the Galaxy. The tale ends with a reassurance of mankind's renaissance.

It is a light, simple, fast-moving and often richly imaginative fantasy, a very pleasant time-passer indeed.

—GROFF CONKLIN

# CLEAN BREAK

By ROGER DEE

*A veteran veterinarian might have vamoosed—but Watts had to help any sick animal . . .*

Illustrated by CONNELL

NOTHING more exciting ever happened to Oliver Watts than being rejected by his draft board for a punctured eardrum until, deferring as usual to the superior judgment of his Aunt Katisha and of Glenna—his elder and militantly spinster sister—he put away his lifelong dream and took up, at the age of twenty-five, the practice of veterinary medicine.

The relinquished dream was Oliver's ambition, cherished since childhood, to become some day a hunter and trainer of jungle animals. It had been discouraged firmly and at length by his Aunt Katisha, who maintained that the skin of the last male Watts

was not to be risked in a pursuit so perilous; and his Aunt Katisha won. He would do far better, Oliver realized finally, to resign himself to the quiet suburban life of Landsdale, Florida, and to perpetuate the Watts line by marrying some worthy and practical local girl. The quiet life, it developed, was that of a D. V. M.; the worthy and practical girl, Miss Orella Simms of Tampa, to whom he was now engaged.

To put it plainly, Oliver was until the moment of his Great Opportunity a good-humored stooge with a cowlick and a sense of responsibility, whose invariable cue was family obligation and whose crowning virtue was docility. He was maneuvered into becoming a D. V. M. (though to tell the truth the profession suited him well enough, being the nearest possible approach to realizing his ambition) solely because the veterinary college in Tampa was near enough to Landsdale for commuting and because his later practice could be carried on under the guiding aegis of his personal matriarchy. The virtuous, and vapid, Orella Simms became his fiancee by the same tactics and for the same reasons.

Oliver *had* considered rebellion, of course, but common sense discouraged the idea. He had no intimates outside his family nor any experience with the world beyond Landsdale and Tampa, and his fledgling self-confidence invariably bogged down in a welter of introspective apprehensions when he thought of running away. Where would he go, and to whom could he turn in emergency?

Such was the character and condition of Oliver Watts when his newly undertaken practice of veterinary medicine threw him into the company of "Mr. Thomas Furnay" and of a girl whose name, as nearly as it can be rendered into English, was Perrl-high-C-trill-and-A-above. Their advent brought Oliver face to face for the first time in his sedentary life with High Adventure —with adventure so high, as a matter of fact, that it took him literally and bodily out of this humdrum world.

THE initial step was taken when Mr. Furnay, known to Landsdale as a wealthy and eccentric old recluse who had recently leased a walled property on Federal Route 27 that had once been the winter retreat of a Prohibition-era gangster, was driven by emergency to call upon Oliver for professional service. Mr. Furnay usually kept very much to himself behind his iron-grilled gates and his miles of

stuccoed wall; but it happened that in pursuit of his business (whose true nature would have confounded Landsdale to its insular core) he had just bought up the entire menagerie of an expiring circus billed as Skadarian Brothers, and it was the sudden illness of one of his newly acquired animals that forced him to breach his isolation.

Mr. Furnay called at the Watts place in his town car, driven by a small, dark and taciturn chauffeur named Bivins. He found Oliver at work in his neatly ordered clinic at the rear of the big house, busily spooning cod-liver oil into a trussed and thoroughly outraged chow named Champ.

"I have a sick animal," Mr. Furnay stated tersely. He was a slight man with a moderately long and wrinkled face, a Panama hat two sizes too large and a voice that had, in spite of its excellent diction, a jarring timbre and definitely foreign flavor.

Oliver blinked, surprised and a little dismayed that Fate should have sent him so early in his career a known and patently capitious millionaire. Bivins, waiting in visored and putteed impassivity to reopen the door for his master, was silently impressive; the town car, parked on the crushed shell driveway outside, glittered splendidly in the late afternoon sunshine.

"I'll be happy to call later in the day," Oliver said. He removed the padded block that had held Champ's jaws apart, and narrowly missed losing a finger as the infuriated chow snapped at his hand. "My aunt and sister are bringing my fiancee down from Tampa for dinner this evening, and I can't leave the clinic until they get here. Someone might call for his pet."

Mr. Furnay protested his extremity of need. "The animal suffers periodic convulsions," he said. "It may be dangerously ill!"

Oliver unstrapped Champ from his detention frame and dodged with practiced skill when the chow tried to bite him on the thigh. He had taken it for granted—having heard none of the gossip concerning Mr. Furnay's recent purchase of the Skadarian Brothers' menagerie — that the sick animal in question was a dog or cat or perhaps a saddle horse, and the bald description of its symptoms startled him more than Champ's predictable bid for revenge.

"Convulsions? What sort of animal is it, Mr. Furnay?"

"A polar bear," said Mr. Furnay.

"Polar bear!" echoed Oliver, and in his shock of surprise he dropped a detaining strap and let Champ loose.

THE dog sprang across the room—without a breath of warning, as chows will—and bit Bivins on the leg just above his puttee. The chauffeur screamed in a high and peculiarly raucous voice and jerked away, jabbering in a vowelless and totally unfamiliar foreign tongue. Mr. Furnay said something sharply in the same grating language; Bivins whipped out a handkerchief, pressed it over the tear in his whipcords and went quickly out to the car.

Oliver collared the snarling Champ and returned him to his cage, where the dog pressed bristling against the bars and stared at Mr. Furnay hungrily with wicked, muddy eyes.

Mr. Furnay's shocked voice said, behind Oliver, "What a ghastly world, where even the *pets* . . ."

He broke off sharply as Oliver turned from the cage.

"I'm truly sorry, Mr. Furnay," Oliver apologized. "If there's anything I can do . . . a dressing for Bivins' leg—"

Mr. Furnay gathered himself with an effort. "It is nothing, a scratch that will heal quickly. But my bear—you will come to see him at once?"

At another time, the thought of absenting himself without due notice to his Aunt Katisha and Glenna would have prompted Oliver to refuse; but the present moment called more for diplomacy than for convention. Better to suffer matriarchal displeasure, he thought, than to risk a damage suit by a millionaire.

"I'll come at once," Oliver said. "I owe you that, I think, after the fright Champ gave you."

And, belatedly, the realization that he might handle a bear—a great, live, lumbering bear!—surged up inside him to titillate his old boyhood yearning. Perhaps it was as well that his aunt and sister were away; this chance to exercise his natural skill at dealing with animals was too precious to decline.

"Of course I won't guarantee a cure," Oliver said, qualifying his promise, "because I've never diagnosed such a case. But I think I can help your bear."

Oddly enough, he *was* almost sure that he could. Oliver, in his younger days, had read a great deal on the care and treatment of circus animals, and the symptoms in this instance had a familiar sound. Mr. Furnay's bear, he thought, in all probability had worms.

The Furnay town car purred away, leaving Oliver to marvel at his own daring while he collected the instruments and medicines he might need.

In leaving the clinic he noted that Mr. Furnay's chauffeur had

dropped his handkerchief at the doorway in his hurry to be gone—but Oliver by this time was in too great a hurry to stop and retrieve it.

His Aunt Katisha might spoil the whole adventure on the instant with a telephone call from Tampa. Bivins could wait.

THE drive, after a day spent in the antiseptic confines of his clinic, was like a holiday jaunt.

The late June sun was hot and bright, the rows of suburban houses trim and clean as scrubbed children sunning themselves among color-splashed crotons and hibiscus and flaming poincianas. Oliver whistled gaily as he turned his little white-paneled call truck off the highway and drove between twin ranks of shedding cabbage palms toward the iron gates of the Furnay estate.

A uniformed gateman who might have been a twin to Bivins admitted him, pointing out a rambling white building that lay behind the stuccoed mansion, and shut the gate. Oliver parked his truck before the menagerie building—it had been a stable in the heyday of the Prohibition-era gangster, when it had held horses or cases of contraband as occasion demanded—and found Bivins waiting for him.

Bivins, looking upset and sullen in immaculate new whipcords, opened the sliding doors without a word.

The vast inside of the remodeled stable was adequately lighted by roof-windows and fluorescent bulbs, but seemed dark for the moment after the glare of sun outside; there was a smell, familiar to every circus-goer, of damp straw and animal dung, and a restless background stir of purring and growling and pacing.

Oliver gaped when his eyes dilated enough to show him the real extent of Mr. Furnay's menageric holdings. At the north end of the building two towering Indian elephants swayed on picket, munching hay and shuffling monotonously on padded, ponderous feet. A roped-off enclosure held half a dozen giraffes which nibbled in aristocratic deprecation at feed-bins bracketed high on the walls; and beyond them three disdainful camels lay on untidily folded legs, sneering glassily at the world and at each other.

The east and west sides of the building were lined with rank after rank of cages holding a staggering miscellany of predators: great-maned lions with their sleek green-eyed mistresses; restless tigers undulating their stripes back and forth and grinning in sly, tusky boredom; chattering monkeys and chimpanzees; leop-

ards and cheetahs and a pair of surly black jaguars whose claw-scored hides indicated either a recent difference of opinion or a burst of conjugal affection.

The south end of the vast room had been recently partitioned off, with a single heavy door breaking the new wall at its center. On either side of this door the bears held sway: shaggy grizzlies, black bears, cinnamon and brown; spectacled Andeans and sleek white polars padding silently on tufted feet.

The sick bear sulked in a cage to himself, humped in an oddly doglike pose with his great head hanging disconsolately.

Oliver sized up the situation, casting back to past reading for the proper procedure.

"I'll need a squeeze-cage and a couple of cage boys to help immobilize the brute," he said. "Will you—"

He was startled, in turning, to find that Bivins had not accompanied him into the building. He was not alone, however. The door at the center of the partitioning wall had opened while he spoke, and a slender blonde girl in the briefest of white sunsuits was looking at him.

APPARENTLY she had not expected Oliver, for there was open interest in her clear green eyes. She said something in a clear and musical—but completely unintelligible—voice that ranged, with a remarkably operatic effect, through two full octaves.

Oliver stared. "I'm here to doctor the sick bear," he said.

"Oh, a *native*," the girl said in English.

Obviously she was trying to keep her voice within the tonal range of his own, but in spite of the effort it trilled distractingly up and down the scale in a fashion that left Oliver smitten with a sudden and unfamiliar weakness of the knees.

"May I help?" she said.

She might, Oliver replied. She could have had as readily, he might have added, a pint of his blood.

Many times while they worked, finding a suitable squeeze-cage and dragging it against the bear's larger cage so that the two doors coincided, Oliver found the prim and reproachful image of Miss Orella Simms rising to remind him of his obligations; but for the first time in his life an obligation was surprisingly easy to dismiss. His assistant's lively conversation, which was largely uninformative though fascinatingly musical, bemused him even to the point of shrugging off his Aunt Katisha's certain disapproval.

The young lady, it seemed, came from a foreign country

whose name was utterly unpronounceable; Oliver gathered that she had not been long with Mr. Furnay, who was of another nationality, and that she was homesick for her native land—for its "saffron sun on turquoise hills and umber sea," which could only be poetic exaggeration or simple unfamiliarity with color terms of a newly learned language—and that she was as a consequence very lonely.

She was, incredibly, a trainer of animals.

"Not of such snarling fierce ones as yours," she said, with a little shiver for the polar bear watching them sullenly through the bars, "but of my own gentle beasts, who are friends."

Her name was a startling combination of soprano sounds that might have been written as Perrl-high-C-trill-and-A-above, but which Oliver was completely unable to manage.

"Would you mind," he asked, greatly daring, "if I called you Pearl instead?"

She would not. But apparently Mr. Furnay would.

THE millionaire, who had entered the menagerie unheard, spoke sternly to the girl in his own raucous tongue and pointed a peremptory finger toward the door through which she had come. The girl murmured "*Ai docssain, Tsammai,*" in a disappointed tone, gave Oliver a smile that would have stunned a harem guard, and disappeared again into her own territory.

Oliver, being neither Chesterfield nor eunuch, was left with the giddy sensation of a man struggling to regain his balance after a sudden earth temblor.

His client reoriented him brusquely. "Treat my bear," Mr. Furnay said.

"I've been waiting for help," Oliver said defensively. "If you'll send around your menagerie manager and a cage boy or two—"

"I have none," Mr. Furnay said shortly. "There are only the four of us here, and not one will approach within touching distance of a brute so vicious."

Oliver stared at him in astonishment . . . Four of them meant only Bivins, the gateman, the lovely blonde creature who called herself Perrl-high-C-trill-and-A-above and Mr. Furnay himself.

"But four inexperienced people can't possibly look after a menagerie of this size!" Oliver protested. "Circus animals aren't house pets, Mr. Furnay—they're restless and temperamental, and they need expert care. They bite and claw each other—"

"There will be more of us later," Mr. Furnay said morosely, "but I doubt that numbers will

help. We had not anticipated a ferocity so appalling, and I fear that my error may have proved the ruin of an expensive project. The native beasts were never so fierce on other—"

He broke off. "I am sorry. You will have to manage as best you can alone."

And he left the menagerie without looking back.

To deal tersely with subsequent detail, Oliver did manage alone—after a fashion and up to a point. It was a simple matter, once he found a four-foot length of conveniently loose board, to prod the unhappy bear from his larger prison to the smaller. The process of immobilizing the brute by winching the squeeze-cage tight was elementary.

But in his casting-back Oliver had overlooked two vitally important precautions: he'd forgotten to secure the gear fastenings, and he'd neglected to rope the smaller cage to the larger.

The bear, startled by the prick of the needle when Oliver gave him a sizable injection of nembutal, reacted with a frantic struggling that reversed the action of the unsecured winch and forced the two cages apart. The door burst open, sprung by the sudden pressure.

The bear stood free.

A considerable amount of legitimate excitement could be injected into such a moment by reporting that the bear, at last in a position to revenge itself for past indignities, leaped upon its tormentor with a blood-freezing roar and that Oliver, a fragile pygmy before that near-ton of slavering fury, escaped only by a hair or was annihilated on the spot.

Neither circumstance developed, however, for the reason that the bear was already feeling the effects of the anesthetic given it and wanted nothing so much as a cool dark place where it might collapse in privacy. And Oliver, caught completely off guard, was too stunned by the suddenness of catastrophe to realize his own possible danger.

What did happen was that Perrl-high-C-trill-and-A-above chose that particular moment to open her door again and look out.

Her fortuitous timing altered the situation on the instant; the bear, bent only on escape and seeing comparative gloom beyond the door, charged not at Oliver but through the opening. And Oliver, still too confused to think past the necessity of retrieving his error, ran after it, brandishing his length of board and shouting wildly.

THE smaller area beyond the partition was dimly lighted, but to judge by its straw-covered

floor and faint animal smell was evidently a special division of Mr. Furnay's menagerie. The light was too dim and the emergency too great to permit Oliver more than a brief and incredulous glimpse of the improbable beast placidly munching hay in a corner; his whole attention was centered first on the fleeing bear and then upon the prostrate form of Perrl-high-C-trill-and-A-above, who had been violently bowled over by the bear's rush.

"Pearl!" yelled Oliver, petrified with horror.

The bear stood swaying upright over her, threshing its tufted forepaws for balance and showing yellow tusks in a grimace that stemmed from drugged weakness but which passed quite creditably for a snarl of demoniac fury.

Obviously something had to be done. Oliver, galvanized by the realization, came to the rescue with a promptness that amounted to reflex action.

"Down, boy!" he said, and dealt the bear a sharp blow across the muzzle with his board.

The bear dealt Oliver a roundhouse clout in return that stretched him half-conscious beside Perrl-high-C-trill-and-A-above. Then, at precisely that moment of greatest dramatic impact, it shook its head dizzily and passed out cold.

The girl scrambled up and knelt beside Oliver to listen to his heartbeat, found that he was alive and raised her voice in an urgent arpeggio that held in spite of its operatic timbre a distinct note of command.

In answer to her call the great beast in the corner—built something on the order of a hippopotamus but with unorthodox variations in that it boasted six legs to either side and was covered with close-curling, bright blue wool—trotted out of the shadows and scooped up the unconscious bear in its four powerful anterior arms.

A word from Perrl-high-C-trill-and-A-above sent it into the main menagerie quarters, where it stuffed the limp bear into its old cage and trotted back to its mistress with a look of adoring deference on its round face.

The girl gave the creature a random trill of commendation and, displaying surprising strength for one so slight, herself dragged the reviving Oliver back to the scene of his unfinished diagnosis. The order given her earlier by Mr. Furnay was not forgotten, however, for she did not linger.

"Not handsome, no," she murmured, locking the partition door behind her this time. "But O Personal Deity of Unmarried Maidens, such headlong bravery!"

OLIVER roused ten minutes later to find himself alone with a memory of nightmare and a sleeping bear that offered no resistance whatever when he funneled a quantity of tetrachlorethylene down its throat.

He was still alone an hour later —and still trying dizzily to separate fact from fancy, having tried the partition door and found it locked—when the bear returned to semi-consciousness and submitted groggily to a follow-up dosage of purgative.

Oliver would have liked to stay long enough to learn the results of his diagnosis and to see Perrl-high-C-trill-and-A-above if she should reappear, but a glance at his watch electrified him with the realization that he had been away from his clinic for more than two hours and that his Aunt Katisha and Glenna might by now have the state police beating the palmetto flats for his body. Accordingly he left the Furnay estate in a great hurry, pausing at the gate only long enough to leave word for Mr. Furnay that he would ring later in the evening to check his patient's progress.

It was not until he had returned home and found his Aunt Katisha still out that his overworked nerves, punished outrageously by shock, violence and confusion, composed themselves enough to permit him a reasonable guess as to what actually had happened—and by that time his conclusions had taken a turn so fantastically improbable that he was lost again in a hopeless muddle of surmise.

He poured himself a glass of milk in the kitchen (he preferred coffee, but his Aunt Katisha frowned on the habit) and took his grisly suspicions down to the clinic, where he felt more at ease than in the antimacassared austerity of the house. There he mulled them over again, and time was able to weave into the pattern the disjointed impressions carried over from his period of semi-consciousness and dismissed until now as nightmare figments from the delirium of shock. Their alignment with other evidence increased his conviction:

Mr. Furnay and Ménage, Oliver concluded with a cold thrill of horror, were not human beings at all but monsters.

THE pattern became even more disturbing when he considered various stories of local saucer-sightings and fireballs, which linked themselves with chilling germanity to the events of the day.

First there had been Champ's instant distrust of Mr. Furnay and Bivins, and his attempt to route them for the aliens they were. There had been Bivins'

anomalous scream when bitten—a raucous sound certainly not human—and Mr. Furnay's grittily inconsonant order, spoken in no identifiable earthly tongue. The isolation of the Furnay estate took on a sinister and significant logic, as did its understaffed condition; there was the evident but baffling reluctance of Mr. Furnay and his myrmidons (with the notable exception of the golden-voiced Pearl) to approach even safely caged beasts, and the greater mystery of why a man so terrified of wild animals should have bought a menagerie in the first place.

Considering the part played by Perrl-high-C-trill-and-A-above in a scheme of things so fantastic left Oliver more disturbed than ever, but for a different reason. That she was unarguably as alien as the others made her equally mysterious, but connoted no share in whatever devious plot occupied the Furnay faction; a reexamination of Mr. Furnay's harshly dictatorial attitude toward her, coupled with Oliver's own uncertain memory of the moment when the girl had come to his rescue, convinced him that she was not ipso facto a member of the extraterrestrial cabal but was its prisoner instead.

Visualizing the probable fate of a beautiful girl held captive by aliens—and forced by them to train outlandish, half-remembered brutes like the one behind the partition—rather strained Oliver's talent for surmise, but at the same time moved him to the uneasy conviction that it was his duty to rescue her in turn.

The thought that he might already be too late appalled him. The slender blonde beauty of Perrl-high-C-trill-and-A-above was distractingly fresh in his mind, the eager arpeggiation of her voice an indelible memory. Recalling the smile she had given him in parting stirred an internal warmth unguessed at before, an emotional ignition certainly never kindled by his fiancee or family.

ORELLA Simms, Glenna, his Aunt Katisha!

Thought of his obligations brought him back to reality with a jar; the appalling gulf between fact and fancy made clear to him with sudden and shocking clarity the nonentity's role that had been played, and must be played, all his life by Oliver Watts.

He was the perennial romantic introvert, dreaming impossible dreams compounded of escape reading and frustration, grasping timorously at any thread of adventure that might lead him to forget for the moment the drab monotone of his existence. His mouth twisted wryly. There was, of course, no fantastic alien plot

incubating on the Furnay estate, no sunsuited damsel in distress awaiting rescue at his inept hands. He'd imagined the romantic aspects of the episode—the "unearthly" tongue, the improbable beast. No one required, or ever would require, anything of Oliver Watts except his Aunt Katisha and Glenna, who demanded obedience, and Orella Simms, who expected conformity.

As if on cue, the Watts family car swung off the highway and rolled down the crushed shell driveway past the clinic. Oliver's Aunt Katisha got out, leaving Glenna and Orella Simms to wait, and strode into the clinic office.

"I see you've managed to spoil another one," she said acidly, pausing long enough to retrieve the handkerchief Mr. Furnay's chauffeur had lost earlier. "Moreover, I called twice this afternoon and found you gone. Where?"

Oliver, as usual, weathered the storm in silence. Somewhere near the end he managed to squeeze in the information that he had treated a sick animal at the Furnay place—a saddle horse, he said, lying automatically as the lesser of two evils.

His aunt Katisha, her inquisitorial duty discharged, dropped the discolored handkerchief pointedly on Oliver's desk and rejoined Glenna and Orella Simms. The car drove away. Oliver, left alone in the growing dusk of evening to his miserable introspection, found his wandering attention returning unaccountably to the crumpled handkerchief, and drew it closer for a better look.

It was only a harmless square of linen, smudged with dust and spotted with blood from Bivins' chow-bitten leg—but with his closer look Oliver's world sprang up and exploded with a shattering bang in his startled face.

The dust was quite ordinary, but Bivins' blood was not.

It was green.

He was never quite sure, later, just what happened next. He retained a vague memory of roaring away in his Aunt Katisha's car through a reckless showering of crushed shell; sometimes he could recall the cool onrush of wind whipping his face and the frantic dodging of approaching headlamps on the highway. But in the main, his descent upon the Furnay estate was a blank.

Only one fact stood out with freezing clarity, excluding any thought of his Aunt Katisha's certain wrath or of Orella's maidenly reproaches: Perrl-high-C-trill-and-A-above was in Deadly Danger, and there was none but Oliver Watts to rescue her.

There was a brief instant of lucidity as he approached the

Furnay gates through the cabbage palms and was forced to choose a course of action.

The attendant certainly would not admit him without orders from Mr. Furnay, who as certainly would not give them; the walls were much too high and sheer for climbing; and to make the need for haste even more critical, it was only too obvious that the Furnay gang was about to depart.

A tremendous saucer-shaped ship had landed by the menagerie building, where it sat with circular peripheral ports aglow and lines of bold enigmatic hieroglyphs fluorescing greenly on its smooth undersurface. Jointed metal figures scurried here and there, chivvying the last of Mr. Furnay's herbivores up a ramp into the belly of the ship; the predators, in cages drawn by other sleek robot stevedores, followed in orderly procession.

Oliver solved his problem of entry by driving headlong through the iron grillwork.

There was a raucous yelling from the gateman, a monstrous rending of metal and jangling of broken glass. Aunt Katisha's car slewed erratically down the Furnay drive, turned over twice and pitched Oliver out, stunned for the second time that day, into the greenish glow shed by the saucership's lights.

HE struggled back to awareness to find his head pillowed on something soft and wonderfully comfortable. A circle of startled faces, most of them dark facsimiles of the putteed Bivins', stared uncertainly down at him. In the near foreground stood Mr. Furnay, wringing his hands and muttering grittily to himself in his own dissonant tongue. Mr. Furnay, seen now for the first time without his too-large Panama, exhibited instead of hair a crest of downy blue feathers and pronged antennae that vibrated softly in the evening breeze.

"Where is she?" Oliver demanded. He scrambled dizzily to his feet, and the circle of faces melted backward hastily. "What have you done with Pearl, you monsters?"

Perrl - high - C - trill - and - A - above, on whose lap Oliver's head had been pillowed, stood up to move between Oliver and the patently apprehensive Mr. Furnay. She wore a light maroon cape over her sunsuit against the mild chill of evening, and could not possibly have looked less like a damsel in distress. She seemed, as a matter of fact, quite happy.

"I hoped you would come to see me again before blastoff," she said. Her voice skipped, tinkling with pleasure, from octave to octave. "But so suddenly—so dashing, so impetuous!"

"You're going away *willingly?*" Oliver said dumbly. "Then they're not forcing—you're not a prisoner after all?"

Her laugh was an arpeggiando blending of surprise and amusement. "A prisoner of these *Tsammai?* No. I am a performer in their company, hired by Xtll—Mr. Furnay—to train and exhibit animals native to my own world."

"But I heard Furnay threaten you in the menagerie building this afternoon! His tone—"

"The *Tsammai* tongue sounds dreadful because it is all consonants and not based on pitch and nuance as mine is," she said. "But the *Tsammai* themselves are only tradesmen, and are very gentle. Xtll—Mr. Furnay—only feared that I might say too much to you then, when it was important that the natives should not suspect our identity."

"It is true," Mr. Furnay nodded, sounding relieved. "We must avoid notice on such worlds as yours, which are too backward to appreciate the marvels of our show. We stop here only to scout for new and novel exhibits."

"Show!" Oliver echoed. "You mean all this is—is—"

"What else?" asked Mr. Furnay. He pointed with his antennae to the fluorescent hieroglyphs on the undersurface of the saucer-ship. "See, in our *lingua galactica* it reads: SKRRFF BROTHERS' INTERSTELLAR CIRCUS, THE GALAXY'S GREATEST. It is the best on the circuit."

He indicated the circle of identical Bivinses. "These are the Skrrff brothers, our owners. I, sir, am business manager."

"But not always a good one," one of the brothers said pointedly. "This time he has bought an entire menagerie of such fierceness that our trainers cannot exhibit it. It will have to be sold to some frontier-planet zoo, and our loss will be staggering."

It was left for Perrl-high-C-trill-and-A-above to deal with the problem, which she did with universal feminine practicality.

"Oliver made your bear well," she pointed out. "And he is afraid of nothing—nothing! Could he not train his own fierce beasts as well as I train my gentle ones?"

Oliver said, "Huh?"

The Skrrff brothers, of course, implored Oliver on the spot to join them at any salary.

Perrl - high - C - trill - and - A - above said demurely, in three octaves and for all the world to hear: "And I'm *lonely*, Oliver!"

Oliver never had a chance.

LIFE in Landsdale goes quietly on, the ripples made by Oliver's departure long since smoothed away by the years.

Miss Orella Simms has mar-

ried the Methodist minister who was to have married her to Oliver. Aunt Katisha and Glenna have resigned themselves to Oliver's escape and have taken over the job of assisting Orella to superintend her husband's career, an occupation eminently satisfactory to all because the placid cleric never dreams troublesome dreams of adventure, as Oliver did, to try their matriarchial patience.

. . . But life is never dull for Mr. and Mrs. Oliver Watts, whose breathtaking performances currently electrify the thrill-hungry cultures of a thousand worlds. They have traveled from Sirius to Saggitarius, and at this writing have two children: a golden-haired daughter of four named Perrl-high-C-trill-and-A-sharp-above, and a tow-headed boy of two who has a cowlick like his father's and whose name is Butch.

They are very happy and there has been no talk between them, though they are wealthy enough in galactic credits by now to have bought half a planet for a home, of settling down to the quiet life. They are quite satisfied to leave such consequential decisions to those who like change for the sake of change or who, unlike Oliver, never know when they are well off.

One clean break to a lifetime, Oliver maintains, is enough.

—ROGER DEE

---

Remarkable as they are, the Pyramids cannot compare with the Incan Road as a feat of ancient engineering. The road reaches from Ecuador to Central Chile, a distance of 4,000 miles over the giant mountains and great canyons of the Andes, crossing swift rivers, deserts and swamps. Twenty-five feet wide, it rises by easy grades from valley to peak and down again, slashing through rock barriers, supported by immense retaining walls, across causeways as high as modern dams over deep ravines, spanning torrents with magnificently anchored suspension bridges whose enormously thick cables were spun of wool and fiber, tunneling through cliffs for astonishing distances.

With its many side roads from the sea to the jungle, the mighty Incan Road totals fully 10,000 miles—yet, by flare and mirror signals, messages could be sent its entire length in four hours! Fish caught in the Pacific were eaten 300 miles away only 24 hours later—the railroad covering the same distance now takes ten hours more!

Most incredible of all, not a single vehicle ever traveled the ancient road, for the Incas never invented the wheel!

*Baley had the world's worst headache—*

*if he solved the murder case,*

*he might be killed; if he didn't,*

*Earth would be seized*

*and he and everybody else*

*would be replaced*

*by Spacer robots!*



Illustrated by
EMSH

# The Caves of Steel

## By Isaac Asimov

**Part 2 of A 3-Part Serial**

*(planets of other suns, originally colonized by Earthmen, but now independent) have established a mission in "Spacetown," just outside New York City, and are attempting to modernize Earth's ingrown economy by the introduction of robot workers. The people of Earth resent this, and when Dr. Sarton, an important "Spacer" is mysteriously murdered, presumably by an Earthman, there arises the possibility of an interstellar crisis.*

*Elijah Baley, detective, is in charge of the investigation and is forced to accept a Spacer robot, R. Daneel Olivaw, as his partner. R. Daneel (R. stands for robot) is so perfectly constructed that Baley mistakes him at first for a human being.*

*Julius Enderby, New York City's Commissioner of Police, was actually at the scene of the crime just after the time of the murder. He impresses upon Baley the fact that failure to solve the*

### SYNOPSIS

*EARTH'S eight billion human beings live in vast enclosed Cities and are fed on yeast and hydroponic foods. Men from the underpopulated "Outer Worlds,"*

crime may bring about demands for an indemnity to the Outer Worlds, and may also hasten the gradual replacement of the human members of the Police Department by specialized robots. Allowing R. Daneel to solve the crime would be equally disastrous. In either case, Baley fears "declassification"—the loss of all special privileges, and reduction to bare existence in the slum levels of the City. He fears this desperately, since his father was declassified and Baley remembers bitterly his resultant unhappy and poverty-stricken childhood.

Baley brings R. Daneel to his apartment. On the way there, they are brought face to face with a threatening anti-robot riot in the shoe department of a retail store. It is R. Daneel's prompt action that averts the danger.

At home, Baley's wife, Jessie, and his son, Bentley, meet R. Daneel without knowing his real nature. (Jessie's full name is Jezebel, but as a result of an argument with her husband over the character of the Biblical Jezebel, she no longer uses her full name.) Jessie and Bentley leave in order that the two men may have privacy.

It is R. Daneel's theory that the murder is the work of the "Medievalists," a group of Earthmen who advocate a return to Earth's ancient ways before the growth of the great "caves of steel," as the enclosed Cities are sometimes known. Most Earthmen have Medievalist tendencies. Even the Police Commissioner, for instance, wears old-fashioned glasses, despite the fact that they may break at inconvenient moments (as they did at the time of the murder in Spacetown), leaving him almost helpless.

Jessie returns unexpectedly and in great agitation. She has suspected that R. Daneel is a robot. When Baley confirms her guess, she is terrified that there may be ostracism or even outright anti-robot violence. She is right—if robots can be made so perfectly, nobody's job and status are safe any longer.

The next morning, Baley asks for permission to travel to Spacetown. The Spacers take complicated precautions to make certain he does not bring in any infection with him. Inside Spacetown, Baley accuses the Spacers of having presented Earth with a false crime in order to make possible aggressive demands. He states that the apparent corpse, viewed by the Commissioner himself, was actually a cleverly designed robot, and that the pretended victim, Dr. Sarton, was still alive.

He was, in fact, the so-called "robot" who masqueraded under the name of R. Daneel Olivaw!

## CHAPTER VIII

AFTER making his accusation, Baley was most conscious of the thud of his own pulse. He seemed to be living in a moment of suspended time. R. Daneel's expression was, as always, unreadable. The Spacer, Dr. Han Fastolfe, wore a look of well-bred astonishment on his face.

It was Commissioner Julius Enderby's reaction that most concerned Baley. The trimensic receiver out of which his face stared did not allow perfect reproduction. There was always that tiny flicker and that not-quite-ideal resolution. Through that imperfection and the further masking of the Commissioner's spectacles, Enderby's eyes were completely unreadable.

Baley thought: Don't go to pieces on me, Julius. I need you.

He didn't really think that Fastolfe would act in haste or under emotional impulse. He had read somewhere once that Spacers had no religion, but substituted, instead, a cold and phlegmatic intellectualism raised to the heights of a philosophy. He believed that and counted on it. They would make a point of acting slowly and then only on the basis of reason.

If he were alone among them and had said what he had said, he was certain that he would never have returned to the City. The Spacers' plans were worth more to them, many times over, than the life of a City-dweller. Maybe they would present his corpse to the Commissioner, shake their heads and speak of an Earthman conspiracy having struck again. The Commissioner would believe them. If he hated Spacers, it was a hatred based on fear. He wouldn't dare disbelieve them.

That was why he had to be an actual witness of events—a witness, moreover, safely out of reach of the Spacers' calculated safety measures.

THE Commissioner said chokingly, "Lije, you're all wrong. I *saw* Dr. Sarton's corpse."

"You saw the charred remnants of something you were told was Dr. Sarton's corpse," retorted Baley. He thought grimly of the Commissioner's smashed glasses. That had been an unexpected break for the Spacers.

"No, no, Lije. I knew Dr. Sarton well and his face was undamaged." The Commissioner put his hand to his glasses uneasily, as though he, too, remembered, and added, "I looked at him closely, very closely."

"How about this one, Commissioner?" asked Baley, pointing to R. Daneel again. "Doesn't he resemble Dr. Sarton?"

"Yes, the way a statue would."

"An expressionless attitude can be assumed, Commissioner. Suppose it was a robot you had seen blasted to death. You say you looked closely. Did you look closely enough to see whether the charred surface at the edge of the blast was really organic tissue or carbonization over fused metal?"

The Commissioner looked revolted. He said, "You're being ridiculous."

Baley turned to the Spacer. "Are you willing to have the body exhumed for examination?"

Dr. Fastolfe smiled. "I would have no objection, Mr. Baley, but we do not bury our dead. Cremation is a universal custom among us."

"Very convenient."

"Tell me, Mr. Baley," said Dr. Fastolfe, "just how did you arrive at this very extraordinary conclusion of yours?"

Baley thought: He isn't giving up. He'll brazen it out, if he can.

He said, "There's more to imitating a robot than just putting on a frozen expression and adopting a stilted style of conversation. The trouble with you men of the Outer Worlds is that you're too used to robots. You've gotten to accept them almost as human beings. On Earth, we're very conscious of what a robot is. R. Daneel is too good a human to be a robot. My first impression of him was that he was a Spacer. It was quite an effort for me to adjust myself to his statement that he was a robot. And, of course, the reason for that was that he *was* a Spacer and *wasn't* a robot."

R. Daneel interrupted without any sign of self-consciousness. "As I told you, partner Elijah, I was designed to take a temporary place in a human society. The resemblance to humanity is purposeful."

"Even," asked Baley, "down to the painstaking duplication of organs which, in a robot, would have no conceivable function?"

Enderby demanded suddenly, "How did you find that out?"

Baley reddened. "I couldn't help noticing in the—in the Personal."

Enderby looked shocked.

FASTOLFE said, "Surely you understand that a resemblance must be complete if it is to be useful. For our purposes, half-measures are as bad as none at all."

Baley asked abruptly, "May I smoke?"

Three pipefuls in one day was a ridiculous extravagance, but he was riding a rolling torrent of recklessness and needed the release of tobacco. After all, he was talking back to Spacers. He was

going to force their lies down their own throat.

Fastolfe said, "I'm sorry, but I'd prefer that you didn't."

It was a "preference" that had the force of a command. Baley felt that. Of course, he thought angrily, Enderby didn't warn me because he doesn't smoke himself, but it follows. They don't smoke on their hygienic Outer Worlds, or drink, or have any human vices. No wonder they accept robots in their damned—what did R. Daneel call it?—C/Fe society. No wonder R. Daneel can play the robot as well as he does. They're all robots to begin with.

He said, "The too-complete resemblance is just one point out of many. There was a near-riot in my section as I was taking *him* home." He had to point. He could bring himself neither to say "R. Daneel" nor "Dr. Sarton" aloud. "He was the one who stopped the trouble and he did it by pointing a blaster at the potential rioters."

"Good Lord!" said Enderby. "The report stated that it was you—"

"I know, Commissioner. The report was based on information that I gave. I didn't want to have it on the record that a robot had threatened to blast men and women."

"No, no, of course not." Enderby was visibly horrified. He leaned forward to look at something out of range of the trimensic receiver. Baley could guess what it was. The Commissioner was checking the power gauge to see if the transmitter was being tapped.

"Is that a point in your argument?" asked Fastolfe.

"It certainly is. The First Law of Robotics states that a robot cannot harm a human being."

"But R. Daneel did no harm."

"True. He even stated afterward that he wouldn't have fired under any circumstances. Still, no robot I ever heard of could have violated the spirit of the First Law by threatening to blast a human crowd, even if he had no intention to do so."

"I see. Are you a robotics expert, Mr. Baley?"

"No, sir. But I've had a course in general robotics and in positronic analysis."

"Very nice," said Fastolfe agreeably, "but, you see, I *am* a robotics expert, and I assure you that the essence of the robot mind lies in a completely literal interpretation of the Universe. It recognizes no spirit in the First Law, only the letter. The simple models you have on Earth may be incapable of threatening a human. An advanced model such as R. Daneel is another matter. If I gather the situation correctly, Daneel's threat was necessary to

prevent a riot. It was intended then to prevent harm to human beings. He was obeying the First Law, not defying it."

BALEY squirmed inwardly, but maintained a tight external calm. Hard as it would be, he would match this Spacer at his own game.

He said, "You may counter each point separately, but they add up just the same. Last evening, in our discussion of the so-called murder, this alleged robot claimed that he had been converted into a detective by the installation of a new drive into his positronic circuits. A drive for *justice*."

"I'll vouch for that," said Fastolfe. "It was done to him three days ago under my own supervision."

"A drive for *justice?* Justice, Dr. Fastolfe, is an abstraction. Only a human being can use the term."

"If you define 'justice' in such a way that it is an abstraction, if you say that it is the rendering of each man his due, that it is adhering to the right, or anything of the sort, I grant you your argument, Mr. Baley. A human understanding of abstractions cannot as yet be built into a positronic brain."

"You admit that, then—as an expert in robotics?"

"Certainly. The question is, what did R. Daneel mean by using the term 'justice?'"

"From the context of our conversation, he meant what you and I and any human being would mean, but what no robot could mean."

"Why don't you ask him to define the term?"

Baley turned to R. Daneel. "What is your definition of justice?"

"Justice is that which exists when all laws are enforced."

Fastolfe nodded. "A good definition for a robot, Mr. Baley. Justice is a very concrete term to him since it is based on law enforcement, which is in turn based upon the existence of specific and definite laws. There is nothing abstract about it. A human being can recognize the fact that, on the basis of an abstract moral code, some laws may be bad ones and their enforcement unjust. What do you say, R. Daneel?"

"An unjust law," said R. Daneel, "is a contradiction in terms."

"To a robot it is, Mr. Baley. As you can see, you mustn't confuse your justice and R. Daneel's."

Baley faced R. Daneel sharply and said, "You left my apartment last night."

R. Daneel replied, "I did. If my leaving disturbed your sleep, I am sorry."

"Where did you go?"

"To the Men's Personal."

For a moment, Baley was staggered. It was the answer he had already decided was the truth, but he had not expected it to be the answer R. Daneel would give. He felt a little of his certainty oozing away. The Commissioner was watching, his lensed eyes flickering from one to the other as they spoke. Baley *couldn't* back down now, no matter what sophistries they used against him.

He said, "On reaching my section, *he* insisted on entering the Personal with me. His excuse was a poor one. During the night, he left to visit Personal again, as he has just admitted. If he were a man, I'd say he had every reason and right to do so. Obviously. As a robot, however, the trip was purposeless. The conclusion can only be that he is a man."

FASTOLFE nodded, seeming not in the least put out. "This is most interesting. Suppose we ask Daneel why he made his trip to the Personal last night."

Commissioner Enderby leaned forward. "Please, Dr. Fastolfe, it is not proper to—"

"You need not be concerned. Commissioner," said Fastolfe, his thin lips curving back in something that looked like a smile, but wasn't. "I am certain that Daneel's answer will not offend your sensibilities or those of Mr. Baley. Won't you tell us, Daneel?"

R. Daneel said, "Elijah's wife, Jessie, left the apartment last night on friendly terms with me. It was apparent that she had no reason for thinking me to be other than human. She returned to the apartment knowing I was a robot. Quite evidently, the information to that effect exists outside the apartment. It followed that my conversation with Elijah last night had been overheard. In no other way could the secret of my true nature have become common knowledge.

"Elijah told me that the apartments were well-insulated. Furthermore, we spoke together in low voices. Elijah is known as a policeman. If a conspiracy exists within the City sufficiently well-organized to have planned the murder of Dr. Sarton, it may well have been aware that Elijah had been placed in charge of the murder investigation. It would fall within the realm of possibility then, even of probability, that his apartment had been spy-beamed.

"I searched the apartment as well as I could after Elijah and Jessie had gone to bed, but could find no transmitter. This complicated matters. A focused duo-beam could do the trick even in the absence of a transmitter, but that requires rather elaborate equipment.

"Analysis of the situation led to the following conclusion. The one place where a City-dweller can do almost anything without being disturbed or questioned is in the Personals. He could even set up a duo-beam there, for the custom of absolute privacy in the Personals is very strong and other men would not even look at him. The Section Personal is quite close to Elijah's apartment, so that the distance factor is not important. A suitcase model could be used. I went to the Personal to investigate."

"And what did you find?" asked Baley quickly.

"Nothing, Elijah. No sign of a duo-beam."

Dr. Fastolfe said, "Well, Mr. Baley, does this sound reasonable to you?"

BALEY'S uncertainty was gone now. He said, "Reasonable as far as it goes, perhaps, but it stops short of perfection by a hell of a way. What *he* doesn't know is that my wife told me where she got the information and *when*. She learned he was a robot shortly after she left the house. Even then, the rumor had been circulating for hours. So the fact that he was a robot could not have leaked out through spying on our last evening's conversation."

"Nevertheless," said Dr. Fastolfe, "his action last night of going to the Personal stands explained, I think."

"But something is brought up that is *not* explained," retorted Baley. "How did the news get out that there was a Spacer robot in the City? As far as I know, only two of us knew about the deal, Commissioner Enderby and myself, and we told no one. Commissioner, did anyone else in the Department know?"

"No," said Enderby anxiously. "Not even the Mayor. Only we and Dr. Fastolfe."

"And *he*," added Baley, pointing.

"I?" asked R. Daneel. "I was with you at all times, Elijah."

"You were *not!* I was in the Personal for half an hour or more before we went to my apartment. During that time, we two were completely out of contact with one another. It was then that you got in touch with your group in the City."

"What group?" asked Fastolfe.

And "what group?" echoed Commissioner Enderby almost simultaneously.

Baley rose from his chair and turned to the trimensic receiver. "Commissioner, I want you to listen closely to this. A murder is reported. By a curious coincidence, it happens just as you are entering Spacetown to keep an appointment with the mur-

dered man. You are shown the corpse of something supposed to be human, but the corpse has since been disposed of and is not available for close examination.

"The Spacers insist an Earthman did the killing, even though the only way they can make such an accusation stick is to suppose that a City man had left the City and cut cross-country to Spacetown alone and at night. You know damn well how unlikely that is.

"Next they send a supposed robot into the City; in fact, they *insist* on sending him. The first thing the robot does is to threaten a crowd of human beings with a blaster. The second is to set in motion the rumor that there is a Spacer robot in the City. The rumor is so specific that Jessie told me it was known that he was working with the police. That means that before long it will be known that it was the robot who handled the blaster. Maybe even now, the rumor is spreading across the yeast vat country and down the Long Island hydroponic plants that there's a killer robot on the loose."

"This is impossible! Impossible!" groaned Enderby.

"It's exactly what's happening, Commissioner. Don't you see it? There's a conspiracy in the City, all right, but it's run from Spacetown. The Spacers *want* to be able to report a murder. They *want* riots. They *want* an assault on Spacetown. The worse things get, the better the incident. Then Spacer ships can come down and occupy the Cities of Earth."

DR. FASTOLFE said mildly, "We had an excuse to do just that during the Barrier riots of twenty-five years ago."

"You weren't ready then. You are now." Baley's heart was pounding madly.

"This is quite a complicated plot you're attributing to us, Mr. Baley. If we wanted to occupy Earth, we could do so in much simpler fashion."

"Maybe not, Dr. Fastolfe. Your so-called robot told me that public opinion about Earth is by no means unified on your Outer Worlds. I think he was telling the truth at that time, anyway. Maybe an outright occupation would not sit well with the people at home. Maybe an incident is an absolute necessity. A good shocking incident."

"Like a murder, eh? Is that it? You'll admit it would have to be a pretended murder. You won't suggest, I hope, that we'd really kill one of ourselves for the sake of an incident."

"You built a robot to look like Dr. Sarton, blasted the robot, and showed the remains to Commissioner Enderby."

"And then," said Dr. Fastolfe, "having used R. Daneel to impersonate Dr. Sarton in the false murder, we have to use Dr. Sarton to impersonate R. Daneel in the false investigation of the false murder."

"Exactly. I am telling you this in the presence of a witness who is not here in the flesh and whom you cannot blast out of existence and who is important enough to be believed by the City government and by Washington itself. We will be prepared for you and we know what your intentions are. If necessary, our government will report directly to your people, expose the situation for exactly what it is. I doubt if this sort of interstellar trickery will be tolerated."

Fastolfe shook his head. "Really, you have the most astonishing notions. Suppose now that R. Daneel is really R. Daneel, that he is actually a robot. Wouldn't the corpse that Commissioner Enderby saw really be Dr. Sarton? It would be scarcely reasonable to believe that the corpse was still another robot. Commissioner Enderby witness R. Daneel under construction and can vouch for the fact only one existed."

"If it comes to that," said Baley stubbornly, "the Commissioner is not a robotics expert. You might have had a dozen such robots."

"Stick to the point, Mr. Baley. What if R. Daneel is R. Daneel? Would you have any further basis for this completely melodramatic and implausible interstellar plot you have constructed?"

"*If* he is a robot! I say he is human. I say no other conclusion is possible."

"Yet you haven't investigated the problem, Mr. Baley," said Fastolfe. "To differentiate a robot, even a very humanoid robot, from a human being, it isn't necessary to make elaborately shaky deductions from little things he says or does. For instance, have you tried sticking a pin into R. Daneel?"

BALEY'S mouth fell open. "What's that?"

"It's a simple experiment. There are others perhaps not quite so simple. His skin and hair look real, but have you tried looking at them under adequate magnification? Then again, he seems to breathe, particularly when he is using air to talk, but have you noticed that his breathing is irregular, that minutes may go by during which he has no breath at all? You might even have trapped some of his expired air and measured the carbon dioxide content. You might have tried to draw a sample of blood. You might have tried to detec

a pulse in his wrist, or a heartbeat under his shirt. Do you see what I mean, Mr. Baley?"

"That's just talk," said Baley uneasily. "I'm not going to be bluffed. I might have tried any of those things, but do you suppose this alleged robot would have let me use a hypodermic on him, or a stethoscope or a microscope?"

"I see your point," said Fastolfe.

He looked at R. Daneel and gestured slightly.

R. Daneel touched the cuff of his right shirt sleeve and the diamagnetic seam slipped open the entire length of his arm. A smooth, sinewy and entirely human limb lay exposed. Its short bronze hairs, both in quantity and distribution, were exactly what one would expect of a human being.

Baley said, "So?"

R. Daneel squeezed the ball of his right middle finger with the thumb and forefinger of his left hand. Just as the sleeve had separated when the diamagnetic field of its seam had been interrupted, so the arm itself opened along the center.

Under a thin layer of fleshlike material was the dull blue-gray of stainless-steel rods, cords and joints.

"Would you care to examine Daneel's workings more closely, Mr. Baley?" asked Dr. Fastolfe politely.

Baley could scarcely hear the remark for the buzzing in his ears and the Commissioner's sudden hysterical laughter.

## CHAPTER IX

THE minutes passed and the buzzing grew louder and drowned out the laughter. The Dome and everything it contained and Baley's time-sense all wavered.

He found himself sitting in an unchanged position, but with a definite feeling of lost time. The Commissioner was gone; the trimensic receiver was milky and opaque; and R. Daneel sat at his side, pinching up the skin of Baley's bared upper arm. Baley could see, just beneath the skin, the thin dark outline of a hypo-sliver. It vanished as he watched, spreading away into the intercellular fluid, from that into the bloodstream and the neighboring cells, and then into all the cells of his body.

"Do you feel better, partner Elijah?" asked R. Daneel.

Baley did. He rolled down his sleeve and looked about. Dr. Fastolfe sat where he had been, a small smile softening the homeliness of his face.

"Did I black out?" Baley asked.

Dr. Fastolfe said, "You received a sizable shock, I'm afraid."

It came back quite clearly. Baley seized R. Daneel's arm, forced up the sleeve as far as it would go, exposing the wrist. The robot's flesh felt soft to his fingers, but underneath was the hardness of something more than bone.

R. Daneel let his arm rest easily in the plainclothesman's grip. Baley stared at it, pinching the skin along the median line. Was there a faint seam?

It was logical that there should be. A robot, covered with synthetic skin, and deliberately made to look human, could not be repaired in the ordinary fashion. A chest plate could not be unriveted. A skull could not be hinged up and outward. Instead, the various parts of the mechanical body would have to be put together along a line of micromagnetic fields. An arm, a head, an entire body must fall open at the proper touch, then come together again when repaired.

Baley looked up. "Where's the Commissioner?" he mumbled, hot with mortification.

"Pressing business," said Dr. Fastolfe. "I encouraged him to leave, I'm afraid. I assured him we would take care of you."

"You've taken care of me quite nicely already, thank you," said Baley grimly. "I think our business is done."

He lifted himself erect, feeling like an old man very suddenly. Too old to start over again. He needed no deep insight to foresee that prospect.

The Commissioner would be half-frightened and half-furious. He would face Baley whitely, taking his glasses off to wipe them every fifteen seconds. His soft voice (Julius Enderby almost never shouted) would explain carefully that the Spacers had been mortally offended.

"You *can't* talk to Spacers that way, Lije. I warned you. If they were Earthmen, it would be different. I'd say yes, chance it. Run the risk. Smoke them out. But *Spacers!* You might have consulted me. I know them inside and out."

WHAT would Baley be able to say? That Enderby was exactly the man he couldn't tell. That the project was one of tremendous risk and Enderby a man of tremendous caution. That it had been Enderby himself who had pointed out the supreme dangers of either outright failure or of the wrong kind of success. That the one way of defeating declassification was to show that the guilt lay in Spacetown itself.

Enderby would say, "There'll have to be a report on this, Lije

and all sorts of repercussions. The Spacers will demand your removal from the case and it'll have to be that way. You understand that, don't you? But I'll protect you as far as I can, Lije."

Baley knew that would be exactly true. The Commissioner would protect him, but only as far as he could—not to the point, for instance of infuriating an already angry Mayor.

He could hear the Mayor, too. "Damn it, Enderby, who's running the City? Why was an unauthorized robot allowed inside? And just what the devil did this Baley—"

If it came to a decision between Baley's future in the Department and the Commissioner's own, what possible choice could Baley expect? He could find no reasonable way of blaming Enderby.

The least he could expect was demotion and that was bad enough. The mere act of living in a modern City insured the bare possibility of existence, even for those entirely declassified. How bare that possibility was, he knew only too well.

It was the addition of status that brought the little things: a more comfortable seat here, a better cut of meat there, a shorter wait in line at the other place. To the philosophical mind, these items might seem scarcely worth any great trouble to acquire.

Yet no one, however philosophical, could give up those privileges, *once acquired*, without a pang. That was the point.

What a trifling addition to the convenience of the apartment a wash-basin was when, for thirty years, the trip to Personals had been an automatic and unregarded one. How useless it was even as a device to prove "status" when it was considered the height of ill-form to parade "status." Yet were the wash-basin to be removed, how humiliating and unbearable would each trip to Personals be! How yearningly attractive the memory of the bedroom shave! How filled with a sense of lost luxury!

IT was fashionable for modern political writers to look back with smug disapproval at the "Fiscalism" of Medieval times, when economy had been based on money. The competitive struggle for existence, they said, was brutal. No truly complex society could survive the eternal "fight-for the buck." (Scholars had varying interpretations of the word "buck," but there was no dispute over the meaning as a whole.)

By contrast, modern "Civism" was praised as efficient and enlightened.

Maybe so. There were histor-

ical novels both in the romantic and the sensational tradition and the Medievalists thought "Fiscalism" had bred such things as individualism and initiative.

Baley wondered sickly if ever a man fought harder for that buck, whatever it was, than a City-dweller fought to keep from losing his Sunday night option on a chicken drumstick—a real-flesh drumstick from a once-living bird.

Baley thought: Not me so much. There's Jessie and Ben.

Dr. Fastolfe's voice broke in upon his thoughts. "Mr. Baley, do you hear me?"

Baley blinked. "Yes?" How long had he been standing there like a frozen fool?

"Won't you sit down, sir? Having attended to the matter on your mind, you may now be interested in the films we took of the scene of the crime."

"No, thank you. I have business in the City."

"Surely the case of Dr. Sarton comes first."

"Not with me. I imagine I'm off the case already." Suddenly, he boiled over. "Damn it, why didn't you prove R. Daneel was a robot right away? Why did you let me make a fool of myself?"

"My dear Mr. Baley, I was interested in your deductions. As for your being off the case, I made a special point of asking the Commissioner that you be retained. I believe he will cooperate."

Baley sat down, not entirely voluntarily. He said sharply, "Why?"

Dr. Fastolfe crossed his legs and sighed. "Mr. Baley, in general I have met two kinds of City-dwellers, rioters and politicians. Your Commissioner is useful to us, but he is a politician. He *handles* us, if you know what I mean. You came here and boldly accused us of tremendous crimes and tried to prove your case. I found it a hopeful development."

"How hopeful?" asked Baley sardonically.

"Hopeful enough. You are someone I can deal with frankly. Last night, Mr. Baley, R. Daneel reported to me by shielded subether. Some things about you interested me very much. For instance, there was the point concerning the nature of the book-films in your apartment."

"What about them?"

"A good many dealt with historical and archeological subjects. It makes it appear that you are interested in human society and that you know a little about its evolution."

"Even policemen can spend their free time on book-films, if they choose."

"QUITE," agreed Dr. Fastolfe. "I'm glad of your choice of viewing matter. It will help me in what I am trying to do. In the first place, I want to explain, or try to, the exclusivism of the men of the Outer Worlds. We live here in Spacetown; we don't enter the City; we mingle with you City-dwellers only in a very rigidly limited fashion. I sit here now with filters in my nostrils, gloves on my hands, and a fixed determination to come no closer to you than I can help. Why do you suppose that is?"

Baley said, "There's no point in guessing." Let *him* talk now.

"If you guessed as some of your people do, you would say that it was because we despised the men of Earth and refused to lose caste by allowing their shadow to fall upon us. That is not so. The medical examination you went through, as well as the cleansing procedures, were not matters of ritual. They were dictated by necessity."

"Disease?"

"Yes, disease. The Earthmen who colonized the Outer Worlds found themselves on planets entirely free of terrestrial bacteria and viruses. They brought in their own, of course, but they also brought with them the latest medical and microbiological techniques. They had a small community of micro-organisms to deal with and no intermediate hosts, such as mosquitoes to spread malaria, snails to spread schistosomiasis. Disease agents were wiped out and symbiotic bacteria allowed to grow. The Outer Worlds became disease-free. Naturally, as time went on, entrance requirements for immigrant Earthmen were made more and more rigorous, since less and less could the Outer Worlds resist disease."

"You've never been sick, Dr. Fastolfe?"

"Not with a parasitic disease. We are all liable to degenerative diseases, but I have never had a cold. If I were to contract one, I might die of it, having built up no resistance to it whatsoever. Those of us who come here run a great risk. Earth is riddled with diseases to which we have no defense, no *natural* defense. You yourself are carrying the germs of almost every known disease. You are not aware of it, since you keep them under control at almost all times through the antibodies your body has developed over the years. We lack the antibodies. Do you wonder that I come no closer to you? Believe me, Mr. Baley, I act aloof only in self-defense."

Baley said, "If this is so, why isn't the fact made known on Earth? I mean that it is not just queasiness on your part, but a

defense against an actual physical danger."

The Spacer shook his head. "We are few, Mr. Baley, and are disliked as foreigners anyway. We maintain our own safety on the basis of a rather shaky prestige as a superior class of being. We cannot afford to lose face by admitting that we are *afraid* to approach an Earthman. Not, at least, until there is a better understanding between Earthmen and Spacers."

"There won't be on the present terms. It's your supposed superiority that we—they hate you for."

"It is a dilemma. Don't think we aren't aware of it."

"Does the Commissioner know of this?"

"We have never explained it to him flatly, as I have just done to you. He may guess it, however. He is quite an intelligent man."

"If he guessed it, he might have told me," Baley said reflectively.

DR. Fastolfe lifted his eyebrows. "If he had, then you wouldn't have considered the possibility of R. Daneel being a human Spacer. Is that it?"

Baley shrugged slightly.

But Dr. Fastolfe went on, "That's quite true, you know. Putting the psychological difficulties to one side, the terrible effect of the noise and crowds upon us, the fact remains that for one of us to enter the City is the equivalent of a death sentence. It is why Dr. Sarton initiated his project of humanoid robots. They were substitute men, designed to enter the City instead of us—"

"R. Daneel explained it to me."

"Do you disapprove?"

"Look," said Baley, "since we're talking to one another so freely, let me ask a question in simple words. Why have you Spacers come to Earth anyway? Why don't you leave us alone?"

Dr. Fastolfe said, with obvious surprise, "Are you *satisfied* with life on Earth?"

"We get along."

"Yes, but how long will that continue? Your population goes up continuously; the available calories meet the needs only as a result of greater and greater effort. Earth is up a blind alley."

"We get along," Baley repeated stubbornly.

"Barely. A City like New York must spend every ounce of effort getting water in and waste out. The nuclear power plants are kept going by uranium supplies that are constantly more difficult to obtain even from the other planets of the Solar System, and the supply needed goes up steadily. The life of the City depends every moment on the arrival of wood-pulp for the yeast vats and

minerals for the hydroponic plants. Air must be circulated unceasingly. The balance is a very delicate one in a hundred directions, and growing more delicate each year. What would happen to New York if the tremendous flow of input and outgo were to be interrupted for even a single hour?"

"It never has been." Baley was on the defensive.

"Which is no security for the future. In primitive times, individual population centers were virtually self-supporting, living on the produce of neighboring farms. Nothing but immediate disaster, a flood or a pestilence or crop failure, could harm them. As the centers grew and technology improved, localized disasters could be overcome by drawing on help from distant centers, but at the cost of making even larger areas interdependent. In Medieval times, the open cities, even the largest, could subsist on food stores and on emergency supplies of all sorts for a week at least. When New York first became a City, it could have lived on itself for a day. Now it cannot do so for an hour. A disaster that would have been uncomfortable ten thousand years ago and merely serious a thousand years ago and acute a hundred years ago would now be fatal."

BALEY moved restlessly in his chair. "I've heard all this before. The Medievalists want an end to Cities. They want us to get back to the soil and to natural agriculture. Well, they're mad; we can't. There are too many of us and you can't go backward in history, only forward. Of course, if emigration to the Outer Worlds were not restricted—"

"You know why it must be."

"Then we have to go on as we are."

"What about emigration to new worlds? There are a hundred billion stars in the Galaxy. If is estimated that there are a hundred million planets that can be inhabited."

"That's ridiculous."

"Why?" asked Dr. Fastolfe, with vehemence. "Why is the suggestion ridiculous? Thirty of the fifty Outer Worlds, including my native Aurora, were directly colonized by Earthmen. Is colonization no longer possible?"

"Well—"

"If it *is* no longer possible, it is because of the development of City culture on Earth. Before the Cities, human life on Earth wasn't so specialized that men couldn't break loose and start all over on a raw world. They did it thirty times. But now Earthmen are so enwombed in their imprisoning caves of steel that they

dare not leave. You, Mr. Baley, won't even believe that a City-dweller is capable of crossing country to get to Spacetown. Crossing space to get to a new world must represent impossibility squared to you. City civilization is ruining Earth!"

Baley said angrily, "And if it does, how does that concern you people? It's our problem."

"I know how you feel. It is not pleasant to listen to the preaching of a stranger. Yet I wish your people could preach to us for we, too, have a problem—one that is analogous to yours."

Baley smiled crookedly. "Overpopulation?"

"Analogous, not identical. Ours is underpopulation. How old do you think I am?"

The Earthman considered for a moment and then deliberately overestimated. "Sixty, I'd say."

"A hundred and sixty, you *should* say."

"What!"

"A hundred and sixty-three next birthday, to be exact, and I'm using the standard Earth year as the unit. If I'm fortunate, if I take care of myself, most of all, if I catch no disease on Earth, I may double that age. People on Aurora have been known to live over three hundred and fifty years. And life expectancy is still increasing."

Baley looked to R. Daneel (who throughout the conversation had been listening in stolid silence), as though he were seeking confirmation.

HE said, "How is that possible?"

"In an underpopulated society," replied Dr. Fastolfe, "it is practical to concentrate research on the aging process. In a world such as yours, a lengthened life expectancy would be disastrous. You couldn't afford the resulting rise in population. On Aurora, there is room for tricentenarians. Then, of course, a long life becomes doubly and triply precious. If you were to die now, you would lose perhaps forty years of your life, probably less. If I were to die, I would lose a hundred and fifty years, probably more. In a culture such as ours, then, individual life is of prime importance. Our birth rate is low and population increase is rigidly controlled. We maintain a definite robot man ratio designed to maintain the individual in the greatest comfort. Logically, developing children are carefully screened for physical and mental defects before being allowed to mature."

Baley interrupted. "You mean you kill them if they don't—"

"If they don't measure up. Quite painlessly, I assure you. The notion shocks you. But the'

Earthman's uncontrolled breeding shocks us just as much."

"We're controlled, Dr. Fastolfe. Each family is allowed only so many children."

Dr. Fastolfe smiled tolerantly. "So many of any kind of children; not so many *healthy* children."

"Who's to judge?"

"That's rather complicated and not to be answered in a sentence. Some day we may talk it over."

"Well, where's your problem? You sound satisfied with your society."

"It is stable. That's the trouble. It is too stable."

BALEY said, "Nothing pleases you. Our civilization is too close to the ragged edge of chaos, according to you, and your own isn't close enough."

"It is possible to be too stable. No Outer World has colonized a new planet in two and a half centuries. There is no prospect for colonization in the future. Our lives in the Outer Worlds are too long to risk and too comfortable to upset."

"You've come to Earth. You risk disease."

"There are some of us, Mr. Baley, who feel that the future of the human race is even worth the possible loss of an extended lifetime. Too few of us, I am sorry to say."

"All right, we're coming to the point. How is Spacetown helping matters?"

"In trying to introduce robots here on Earth, we're doing our best to upset the balance of your City economy."

"That's your way of helping?" Baley's lips quivered. "You mean you're creating a growing group of displaced and declassified men on purpose?"

"Not out of cruelty or callousness, believe me. A group of displaced men, as you call them, are what we need to serve as a nucleus for colonization. Your ancient America was discovered by ships fitted out with men from the prisons. Don't you see that the City's womb has failed the displaced man? He has nothing to lose and worlds to gain by leaving Earth."

"But it isn't working." Baley frowned thoughtfully.

"No, it isn't," said Dr. Fastolfe, sadly. "There is something wrong. The resentment of the Earthman for the robot blocks things. Yet those very robots can accompany humans, smooth the difficulties of initial adjustment to a raw world, make colonization practical."

"Then what? More Outer Worlds?"

"No. The Outer Worlds were established before the Cities had spread over Earth. The new col-

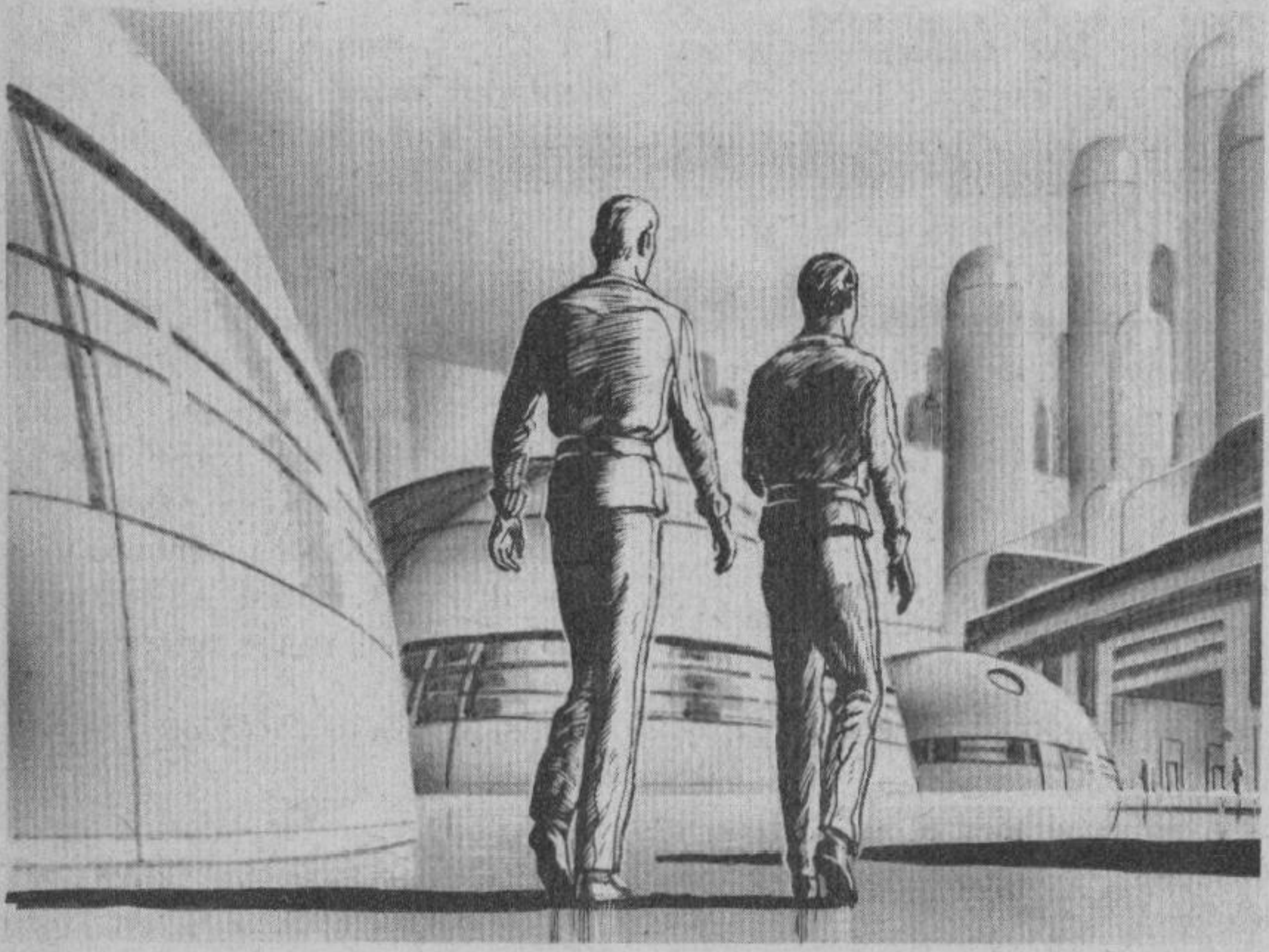
onies will be built by humans who have the City background plus the beginnings of a C/Fe culture. It will be a synthesis. A carbon iron symbiosis. As it stands now, Earth's own structure must go ricketing down in the near future, the Outer Worlds will slowly degenerate and decay in a somewhat further future, but the new colonies will be a new and healthy strain, combining the best of both cultures. By their reaction upon the older worlds, including Earth, we ourselves may gain new life."

"I don't know. It's all very vague, Dr. Fastolfe."

"A dream, yes, but a sharply detailed one. Think about it." Abruptly the Spacer rose to his feet. "I have spent more time with you than I intended. In fact, more time than our health ordinances allow. You will excuse me?"

WITH R. Daneel, Baley left the dome. Sunlight, at a different angle, somewhat yellower, washed down upon them once again. Baley wondered uneasily whether sunlight might not seem different on another world. Less harsh and brazen, perhaps. More acceptable.

Another world? The homely Spacer with the prominent ears



had filled his mind with queer imaginings. Did the doctors of Aurora once look at the child Fastolfe and wonder if he ought to be allowed to mature? Wasn't he too ugly? Or did their criteria include physical appearance at all? When did ugliness become a deformity and what deformities—

But when the sunlight vanished and they entered the first door that led to the Personal, the mood became harder to maintain.

Baley shook his head with exasperation. Forcing Earthmen to emigrate, to set up a new society! It was nonsense! What were these Spacers *really* after?

He thought about it and came to no conclusion.

Slowly, their squad-car rolled down the vehicular lane. Reality was surging all about Baley. His blaster was a warm and comfortable weight against his hip. The noise and vibrant life of the City were just as warm, just as comfortable.

For a moment, as the City closed in, his nose tingled to a slight and fugitive pungence.

He thought wonderingly: The City smells.

He thought of the twenty million human beings crammed into the steel walls of the great cave and for the first time in his life he smelled them with nostrils that had been washed clean by outdoor air.

He thought: Would it be different on another world? Less people and more air—cleaner?

But the afternoon roar of the City was all around them, the smell faded and was gone and he felt a little ashamed of himself.

He let the drive-rod in slowly and tapped a larger share of the beamed power. The squad-car accelerated sharply as it slanted down into the empty Motorway.

"Daneel," he said.

"Yes, Elijah?"

"Why was Dr. Fastolfe telling me all that?"

"We are not here just to solve a murder, but to save Spacetown and, with it, the future of the human race."

Baley said drily, "I think he'd have been better off if he'd let me see the scene of the crime and interview the men who first found the body."

"I doubt if you could have added anything, Elijah. We have been quite thorough."

"Have you? You've got nothing. Not a clue. Not a suspect."

"No, you are right. The answer must be in the City. To be accurate, though, we did have one suspect."

"What? You said nothing of this before."

"I did not feel it to be necessary, Elijah. Surely it is obvious to you that one suspect automatically existed."

"In the devil's name, who?"

"The one Earthman who was on the scene. Commissioner Julius Enderby."

## CHAPTER X

THE squad-car veered to one side, halted against the concrete wall of the Motorway. With the humming of its motor stopped, the silence was dead and thick.

Baley looked at the robot next to him and asked in an incongruously quiet voice, "What did you say?"

Timé stretched while Baley waited for an answer. A small and lonesome vibration rose and reached a minor peak, then faded. It was the sound of another squad-car, boring its way past them on some unknown errand, perhaps a mile away. Or else it was a fire-car hurrying along toward its own appointment with combustion.

A detached portion of Baley's mind wondered if any one man any longer knew all the Motorways that twisted about in New York City's bowels. At no time in the day or night could the entire Motorway system be completely empty, and yet there must be individual passages that no man had entered in years. With sudden, devastating clarity, he remembered a short story he had viewed as a youngster.

It concerned the Motorways of London and began, quietly enough, with a murder. The murderer fled toward a prearranged hideout in the corner of a Motorway in whose dust his own shoeprints had been the only disturbance for a century. In that abandoned hole, he could wait in complete safety till the search died.

But he took a wrong turning and in the silence and loneness of those twisting corridors he swore a blaspheming oath that he would yet reach his haven.

From that time on, no turning was right. He wandered through an unending maze from the Brighton sector on the Channel to Norwich and from Coventry to Canterbury. He burrowed endlessly beneath the great City of London from end to end of its sprawl across the southeastern corner of Medieval England. His clothes were rags and his shoes ribbons, his strength wore down but never left him. He was tired, tired, yet unable to stop.

Sometimes he heard the sound of passing cars, but they were always in the next corridor, and however fast he rushed (for he would gladly have given himself

up by then), the corridors he reached were always empty. Sometimes he saw an exit far ahead that would lead to the City's life and breath, but it always glimmered farther away as he approached until he would turn—and it would be gone.

Occasionally, Londoners on official business through the underground would see a misty figure limping silently toward them, a semi-transparent arm lifted in pleading, a mouth open and moving, but soundless. As it approached, it would waver and vanish.

It was a story that had lost the attributes of ordinary fiction and had entered the realm of folklore. The "Wandering Londoner" had become a familiar phrase to all the world.

In the depths of New York City, Baley remembered the story and stirred uneasily.

R. DANEEL spoke and there was a small echo to his voice. He said, "We may be overheard."

"Down here? Not a chance. Now what was that you said about the Commissioner?"

"He was on the scene, Elijah. He is a City-dweller. He was inevitably a suspect."

"*Was?* You mean he isn't a suspect now?"

"His innocence was quickly established. For one thing, there was no blaster in his possession. There could not very well be one. He had entered Spacetown in the usual fashion and you know blasters are removed as a matter of course."

"Was the murder weapon found at all?"

"No, Elijah. Every blaster in Spacetown was examined and none had been fired for weeks."

"Then whoever had committed the murder had either hidden the weapon so well—"

"It could not have been hidden anywhere in Spacetown."

Baley said impatiently, "I'm trying to consider all possibilities. It was either hidden or it was carried away by the murderer when he left."

"Exactly."

"And if you admit only the second possibility, then the Commissioner is cleared."

"Yes. As a precaution, of course, he was cerebroanalyzed."

"He was what?"

"The interpretation of the electromagnetic fields of the living brain cells."

"Oh," said Baley, unenlightened. "And what does that tell you?"

"It gives us information concerning the temperamental and emotional makeup of an individual. In the case of Commissioner Enderby, it told us that he was

incapable of killing Dr. Sarton."

"I could have told you that."

"It is better to have objective information. Naturally, our people in Spacetown allowed themselves to be cerebroanalyzed as well."

"All incapable, I suppose."

"Beyond question. That is why we know that the murderer must be a City-dweller."

"Well, then, all we have to do is put the whole City through your cute little process."

"It would not be very practical, Elijah. There might be millions temperamentally capable of the deed."

"Millions," grunted Baley, thinking of the crowds that long ago day who had screamed at the "dirty Spacers," and of the threatening and slobbering crowds outside the shoe store the night before.

He thought: Poor Julius. A suspect!

He could hear the Commissioner's voice describing the period after the discovery of the body: "It was brutal, brutal." No wonder he had broken his glasses in shock and dismay. No wonder he did not want to return to Spacetown. "I hate them," he had ground out between his teeth.

Poor Julius. The man who could handle Spacers. The man whose greatest value to the City lay in his ability to get along with them. How much had that contributed to his rapid promotions?

No wonder the Commissioner had wanted Baley to take over. Good old loyal, close-mouthed Baley. College chum! He would keep quiet if he found out about that little incident. Baley wondered how cerebroanalysis was done. He imagined huge electrodes, busy pantographs skidding inklines across graphed paper.

Poor Julius. He must already be seeing himself at the end of his career with a forced letter of resignation in the hands of the Mayor.

The squad-car slanted up into the sub-levels of City Hall.

IT was 14:30 when Baley arrived back at his desk. The Commissioner was out. R. Sammy, grinning his mechanical grin, did not know where the Commissioner was.

Baley spent some time thinking. The fact that he was hungry didn't register.

At 15:20 R. Sammy came to his desk and said, "The Commissioner is in now, Lije."

Baley said, "Thanks."

For once he listened to R. Sammy without being annoyed. R. Sammy, after all, was a kind of relation to R. Daneel, and R.

Daneel obviously wasn't a person—or thing, rather—to get annoyed with. Baley wondered how it would be on a new planet with men and robots starting even about a City culture. He considered the situation quite dispassionately.

The Commissioner was going through some documents as Baley entered, stopping occasionally to make notations.

He said, "That was a giant-size blooper you pulled out in Spacetown."

FOR a moment, Baley felt puzzled. Then it hit him with shocking impact. Jehoshaphat, how had he forgotten the verbal duel with Fastolfe!

His long face took on a lugubrious expression of chagrin. "I'll say I did, Commissioner. I'm sorry."

Enderby looked up. His expression was keen and his eyes glanced firmly through their glass barriers. He seemed more himself than at any time these thirty hours. He said, "Fastolfe didn't seem to mind, so we'll forget it. Unpredictable, these Spacers. You don't deserve your luck, Lije. Next time, talk it over with me before you make like a subether hero."

Baley nodded. He had tried a grandstand stunt and it hadn't worked. Okay. He was a little surprised that he could be so casual about it, but there it was.

He said, "Look, Commissioner. I want to have a two-man apartment assigned to Daneel and myself. I'm not taking him home tonight."

"What's all this?"

"The news is out that he's a robot. Remember? Maybe nothing will happen, but if there is a riot, I don't want my family in the middle of it."

"Nonsense, Lije. I've had the thing checked. There's no such rumor in the City."

"Jessie got the story somewhere, Commissioner."

"Well, there's no organized rumor. Nothing dangerous. I've been checking this ever since I got off the trimensic at Fastolfe's dome, which was why I left. I had to track it down fast. There's Doris Gillid's report. She went through a dozen Women's Personals in different parts of the City. You know Doris. She's a competent girl. Well, nothing showed anywhere. Not a thing."

"Then how did Jessie get the rumor?"

"It can be explained. R. Daneel made a display of himself in the shoe store. Did he really pull a blaster, Lije, or were you stretching the facts a little—just a little, perhaps?"

"He really pulled one. Pointed it, too."

COMMISSIONER Enderby shook his head. "All right. Someone recognized him. As a robot, I mean."

"Hold on," said Baley indignantly. "You can't tell he's a robot."

"Why not?"

"Could you? I couldn't."

"We're no experts. Suppose there was a technician out of the Westchester robot factories in the crowd, a man who has spent his life building and designing robots. He notices something queer about R. Daneel. Maybe in the way he talks or holds himself. He speculates about it. Maybe he tells his wife. She tells a few friends. Then it dies because people don't believe it. Only it got to Jessie before it died."

"Maybe," said Baley doubtfully. "But how about an assignment to a bachelor room for two, anyway?"

The Commissioner shrugged, lifted the intercom. After a while, he said, "Section Q-27 is all they can do. It's not a very good neighborhood."

"It'll do," said Baley.

"Where's R. Daneel now, by the way?"

"He's at our record files, trying to collect information on Medievalist agitators."

"But there are millions!"

"I know, but it keeps him happy."

Baley was nearly at the door when he turned, half on impulse, and said, "Commissioner, did Dr. Sarton ever talk to you about Spacetown's program? I mean about introducing the C/Fe culture?"

"The what?"

"Introducing robots."

"Occasionally."

"Did he ever explain what Spacetown's purpose was?"

"Oh, improve health, raise the standard of living. The usual stuff. I nodded my head and all that. It's just a matter of humoring them and hoping they'll keep their ideas within reason. Maybe some day—"

Baley waited, but Enderby didn't say what particular maybe some day might bring.

Baley said, "Did he ever mention anything to you about emigration?"

"Emigration? Never! Letting an Earthman into an Outer World is like finding a diamond asteroid in the rings of Saturn."

"I mean emigration to new worlds."

But the Commissioner answered that one with a simple stare of incredulous horror.

Baley said with sudden bluntness, "What's cerebroanalysis, Commissioner? Ever hear of it?"

The Commissioner's round face showed only polite interest. "No. What's it supposed to be?"

"Nothing. Just picked it up."

Baley left the office and at his desk continued thinking. Certainly the Commissioner wasn't *that* good an actor.

AT 16:05, Baley called Jessie and told her he wouldn't be home that night or probably any night for a while.

"Lije, is there trouble?" she asked anxiously. "Are you in danger?"

"A policeman is always in a certain amount of danger," he explained lightly. It didn't satisfy her.

"Where will you be staying?"

He didn't tell her. "If you're going to be lonely tonight," he said, "stay at your mother's." He broke the connection abruptly, which was probably just as well.

At 16:20, he made a call to Washington. It took a long time to reach the man he wanted and an almost equally long time to convince him he ought to make an air-trip to New York the next day. By 16:40, he had succeeded.

At 16:55, the Commissioner left, passing him with an uncertain smile. The day shift departed en masse. The skeleton night shift made its way in and greeted him in varied tones of surprise.

R. Daneel came to his desk with a thick sheaf of papers. "This is a list of men and women who might belong to a Medievalist organization, Elijah."

Baley shook his head. "Can't be. It's too small."

"But there are over a million names here!"

"Listen, Daneel. Almost all Earthmen are Medievalists in one way or another. Look at the Commissioner's—" he almost said "spectacles," then remembered that Earthmen must stick together, the Commissioner's face must be protected in the figurative as well as the literal sense—"eye-ornaments."

"Yes," said R. Daneel, "I had noticed them, but thought it perhaps indelicate to refer to them. I have not seen such ornaments on other City-dwellers."

"It is a very old-fashioned sort of thing."

"Does it serve a purpose of any sort?"

"Usually. Daneel, how did you get your list?"

"A machine did it for me. Apparently, one sets it for a particular type of offense and it does the rest. I let it scan all disorderly conduct cases involving robots over the past twenty-five years. Another machine scanned all City Newspapers for those who made unfavorable statements concerning robots or men of the Outer Worlds. It is amazing what can be done in three hours. The machine even

eliminated the names of non-survivors from the lists."

"You are amazed? Surely you've got computers on the Outer Worlds."

"Very advanced ones. But none are as massive and complex as the ones here. You must remember, of course, that even the largest Outer World scarcely has the population of one of your Cities and so extreme complexity is not necessary."

"Have you ever been on Aurora?"

"No," said R. Daneel. "I was assembled here on Earth."

"Then how do you know about Outer World computers?"

"My data store was drawn from Dr. Sarton."

"I see. Can you eat, Daneel?"

"I am nuclear-powered. I had thought you were aware of that."

"I didn't ask if you *needed* to eat. I asked if you *could* eat—put food in your mouth, chew it and swallow it. I should think that would be important in seeming to be a man."

"I see your point. Yes, I can perform the mechanical operations of chewing and swallowing. Naturally, I would eventually have to remove the merely macerated food from what you might call my stomach."

"All right. You can do that in the privacy of our room tonight. I've missed lunch, damn it, and I want you with me when I eat. And you can't sit there and *not* eat without attracting attention."

"Very well," said R. Daneel. "I shall be glad to—eat—with you."

SECTION kitchens were the same all over the City. What's more, Baley had been in Washington, Toronto, Buenos Aires, London, Canton and Durban in line of duty, and they had been the same there, too. Perhaps it had been different in Medieval times when languages and diets had varied. Nowadays, yeast products were identical everywhere; and English might not be the "English" of Shakespeare or Churchill, but it was the final potpourri that was current over all the continents and, with some modification, on the Outer Worlds as well.

Language and dietary aside, there were the deeper similarities. There was always that particular odor, undefinable but completely characteristic, of "kitchen." There was the waiting triple line moving slowly in, converging at the door and splitting up again; right, left, center. There was the rumble of humanity, speaking and moving, and the sharper clatter of plastic on plastic. There was the gleam of simulated wood, highly polished;

highlights on glass; long tables; the touch of steam in the air.

Baley inched forward as the line moved. With all possible staggering of meal hours, a wait of at least ten minutes was almost unavoidable. He said to R. Daneel in sudden curiosity, "Can you smile?"

R. Daneel had been gazing at the interior of the kitchen with cool absorption. He turned and smiled. That is, his lips curled back and the skin about either end folded. Only the mouth smiled, however. The rest of the robot's face was unchanged.

Baley looked away. "Don't bother. It doesn't do a thing for you."

They were at the entrance. Person after person thrust a metal food-tag through the appropriate slot and had it scanned. Click—click—click—

A smoothly running kitchen could allow the entrance of two hundred persons a minute, the tags of each one being fully scanned to prevent kitchen-jumping, meal-jumping and ration-stretching. But that was at maximum efficiency, which was lost when any one person required special treatment, like stepping to the manual window, as Baley and R. Daneel did, in order to thrust a special permit pass at the official in charge.

Jessie, an assistant dietitian before she'd married Baley, had explained it once to him.

"It upsets things completely, throws off consumption figures and inventory estimates. It means special checks. You have to match slips with all the different Section kitchens to make sure the balance isn't too unbalanced, if you know what I mean. There's a separate balance sheet to be made out each week. Then if anything goes wrong and you're overdrawn, it's always your fault. It's never the fault of the City for passing out special tickets to everybody and his kid sister. Oh, no. And when we have to say that free choice is suspended for the meal, don't the people in line make a fuss! It's always the fault of the people behind the counter—"

KNOWING this, Baley understood the dry and poisonous look he received from the woman behind the window. She made a few hurried notes. Home Section, occupation, reason for meal displacement ("official business," a very irritating reason, but irrefutable). Then she folded the slip and pushed it into a slot. A computer seized it, devoured the contents and digested the information.

Finished with Baley, she turned to R. Daneel.

Baley jumped in hurriedly. He

said, "My friend is out-of-City."

The woman looked finally and completely outraged. "Home City, please," she asked through clamped teeth.

Baley intercepted for Daneel once again. "All records are to be credited to the Police Department. No details necessary. Official business."

The woman brought down a pad of slips with an angry slam and filled in the data in dark-light code with savage pressure of the first two fingers of her right hand.

"How long will you be eating here?"

"Till further notice," said Baley.

"Press here."

Baley had a short qualm as R. Daneel's even fingers with their glistening nails pushed downward. Surely they wouldn't have forgotten to supply him with fingerprints.

The woman took the blank away and fed it into the machine near her elbow. It belched nothing back and Baley breathed more easily.

She gave them little metal tags that were in the bright red that meant "temporary."

She said, "No free choices. We're short this week. Take table DF."

They made their way toward DF.

R. Daneel said, "I am under the impression that most of your people eat regularly in kitchens such as these."

"Yes. Of course, it's rather gruesome eating in a strange kitchen. There's no one you know. In your own kitchen, you have your own seat and you're with your family and your friends. Especially when you're young, mealtimes are the bright spot of the day." Baley smiled in brief reminiscence.

Table DF was apparently reserved for transients. Those already seated watched their plates and did not talk with one another. They looked with sneaking envy at the laughing crowds.

There is no one so uncomfortable, thought Baley, as the man eating out-of-Section. Be it ever so humble, the old saying went, there's no place like home-kitchen. Even the food tastes better, no matter how many chemists are ready to swear it to be no different from the food in Johannesburg.

HE sat down on a stool and R. Daneel took one next to him.

"No free choice," said Baley, "so just close the switch there and wait."

It took two minutes. A disc slid back in the table top and a dish lifted.

"Mashed potatoes, zymoveal sauce and stewed apricots. Oh, well," Baley said.

A fork and two slices of whole yeast bread appeared in a recess just in front of the low railing that went down the long center of the table.

R. Daneel said in a low voice, "You may help yourself to my serving, if you wish."

For a moment, Baley was scandalized. Then he remembered and mumbled, "That would be bad manners. Go on, eat."

Baley ate industriously, but without enjoyment. He flicked an occasional glance at R. Daneél. The robot ate with precise motions of his jaws. Too precise. It didn't look quite natural.

Strange, now that Baley knew R. Daneel was actually a robot, all sorts of little disparities showed up clearly, such as no movement of an Adam's apple when R. Daneel swallowed. Yet Baley didn't mind so much. Was he getting used to the creature? Suppose people started afresh on a new world—how that ran through his mind ever since Dr. Fastolfe had put it there—suppose Bentley, for instance, were to leave Earth, could he get so he wouldn't mind working and living alongside robots?

R. Daneel said, "Elijah, is it bad manners to watch another man while he is eating?"

"If you mean stare directly at him, well, sure. That's only common sense, isn't it? A man has a right to his privacy. Ordinary conversation is all right, but you don't gape at a man while he's chewing."

"I see. Why is it, then, that I count eight people watching us very closely?"

Baley put down his fork. He looked about as though he were searching for the salt-pinch dispenser.

"I see nothing at all out of the ordinary."

But he said it without conviction. The mob of diners was only a vast conglomeration of strangers to him. And when R. Daneel turned his impersonal brown eyes upon him, Baley suspected uncomfortably that those were not eyes he saw, but photographic scanners.

"I am quite certain," said R. Daneél calmly.

"Well, what of it? It's crude behavior, but what does it prove?"

"I cannot say, Elijah. Is it coincidence that six of the watchers were in the crowd outside the shoe store last night?"

## CHAPTER XI

ELIJE Baley's grip tightened on his fork.

"Are you sure?" he demanded,

and immediately realized the uselessness of the question. You don't ask a computer if it is sure of the answer it disgorges; not even a computer with arms and legs and face. "Are they close to us?"

"Not very. They are scattered."

Baley returned to his meal, his fork moving mechanically. Behind the frown on his long face, his mind worked furiously.

Suppose the incident last night had been organized by a group of anti-robot fanatics—men who had studied robots with the intensity born of deep hostility. One of them might have recognized R. Daneel for what he was. (The Commissioner had suggested that, in a way. Damn it, there were surprising depths to that man.)

Even if they had been unable to act in an organized manner at the spur of the moment, they would still have been able to plan for the future. If they could recognize a robot such as R. Daneel, they could certainly realize that Baley himself was a police officer. A police officer in the unusual company of a humanoid robot would very likely be a responsible man in the organization.

It followed then that observers at City Hall (or perhaps agents within City Hall) would be bound to spot Baley, R. Daneel, or both before too long a time had passed. That they had within twenty-four hours was not surprising. They might have done so in less time if Baley's day had not been spent mainly in Spacetown and along the Motorway.

R. Daneel had finished his meal. He sat quietly waiting, his perfect hands resting lightly on the end of the table.

"Had we not better do something?" he asked.

"We're safe here in the kitchen," said Baley. "Now leave this to me. Please."

Baley looked about him cautiously and it was as though he saw a kitchen for the first time.

What was the capacity of an average kitchen? About 2200. This one was larger than average.

Suppose the cry "Robot!" were tossed among the thousands like a—

He was at a loss for a comparison.

A SPONTANEOUS riot could flare anywhere; in the kitchens as easily as in the corridors or in the elevators. More easily, perhaps. There was a lack of inhibition at mealtimes, a sense of horseplay that could degenerate into something more serious at a trifle.

But a planned riot would be

different. Here in the kitchen, the agitators would themselves be caught in a mob-filled room. Hundreds would certainly die and they themselves might easily be among them.

No, a safe riot would have to be planned in the avenues of the City, in some relatively narrow passageway. There would be time for the quick, prepared fade-away along the side passage or the unobtrusive step onto an escalating Localway that would move them to a higher level and disappearance.

Baley felt trapped. There were probably others waiting outside. Baley and R. Daneel were to be followed to a proper point and the fuse would be set off.

R. Daneel said, "Why not arrest them?"

"That would only start the trouble sooner. You know their faces, don't you?"

"I am not capable of forgetting."

"Then we'll nab them another time. Follow me. Do exactly as I do."

He rose, turned his dish carefully upside down, centering it on the movable disc on which it had risen. He put his fork back in its recess. R. Daneel, watching, did the same. The dishes and utensils dropped out of sight.

R. Daneel said, "They are getting up, too."

"They won't get too close. Not here."

BALEY looked through the steamy haze and the noise and with incongruous sharpness thought of a visit to the City Zoo with Ben six or seven years ago. It had been the boy's first visit and he had been excited. After all, he had never actually seen a cat or a dog or a bird before. Even Baley himself, who had seen it a dozen times before, was not immune to its fascination.

It was feeding time in the sparrow cage and an attendant was dumping cracked oats into a long trough. Human beings had grown used to yeast substitutes, but animals, more conservative in their way, insisted on real grain.

The sparrows flocked down in what seemed like hundreds. Wing to wing, with an ear-splitting twitter, they lined the trough—

That was it, the picture that came to Baley's mind as he looked back at the kitchen he was leaving. Sparrows at the trough. The thought repelled him.

He thought: Jehoshaphat, there must be a better way.

But what better way? What was wrong with this way? It had never bothered him before.

He said abruptly to R. Daneel, "Ready, Daneel?"

"I am ready, Elijah."

They left the kitchen and escape was now flatly up to Baley.

THERE is a game that youngsters know called "running the strips." Its rules vary from City to City, but the essentials are eternal. Its object is to get from point A to point B via the City's rapid transit system in such a way that the "leader" manages to lose as many of his followers as possible. A leader who arrives at the destination alone is skillful indeed, as is a follower who refuses to be shaken.

The game is usually conducted during the evening rush-hour when the increased flow of commuters makes it more hazardous and complicated. The leader sets off, running up and down the accelerating strips. He does his best to do the unexpected, standing on a strip as long as possible, then leaping off suddenly in either direction. He will run quickly through several strips, then remain waiting once more.

Pity the follower who incautiously careens forward one strip too far. Before he has caught his mistake, unless he is extraordinarily nimble, he has driven past the leader or fallen behind.

To increase the complexity of the task tenfold, a leader will board the Localways or the Expressways themselves, and hurtle off the other side. It is bad form to avoid them completely and also bad form to linger on them.

The attraction of the game is not easy for an adult to understand, particularly for an adult who has never himself been a teen-age strip-runner. The players are roughly treated by legitimate travelers into whose path they find themselves inevitably flying. They are persecuted by the police and punished by their parents, denounced in the schools and on the sub-etherics. No year passed without its four or five teen-agers killed at the game; its dozens hurt; its cases of injured innocent bystanders.

Yet nothing could be done to wipe out the strip-running gangs. The greater the danger, the more the strip-runners had that most valuable of all prizes, honor in the eyes of their fellows. A successful one might well swagger; a well-known leader was cock-of-the-walk.

Elijah Baley, for instance, remembered with satisfaction even now that he had been a strip-runner once. He had led a gang of twenty from the Concourse Sector to the borders of Queens, crossing three Expressways. In two tireless and relentless hours, he had shaken off some of the most agile followers of the Bronx, and arrived at the destination

point alone. They had talked about that run for months.

Baley hadn't run the strips for over twenty years, but he remembered some of the tricks. What he had lost in agility, he made up in the fact that he was a policeman. No one but another policeman as experienced as himself could possibly know where almost every metal-bordered alley began and ended.

HE walked away from the kitchen briskly, but not too rapidly. Each moment he expected the cry of "Robot! Robot!" to ring out behind him. He counted the steps until he felt the first accelerating strip moving under him.

He stopped for a moment, while R. Daneel moved smoothly up beside him.

"Are they still behind us, Daneel?"

"Yes. They are moving closer."

"That won't last," said Baley confidently. He looked at the strips stretching to either side, with their human cargo whipping to his left more and more rapidly as their distance from him increased. He had felt the strips beneath his feet many times a day almost all the days of his life, but he had not bent his knees in anticipation of running them in seven thousand days and more. He felt the old familiar thrill and his breath grew more rapid.

He forgot the one time he had caught Ben at the game. He had lectured him interminably and threatened to have him put under police surveillance.

Lightly, quickly, at double the "safe" rate, he went up the strips. He leaned forward sharply against the acceleration. The Localway was humming past. For a moment, it looked as though he would mount, but suddenly he was fading backward, backward, dodging through the crowd to left and right as it thickened on the slower strips.

He stopped and let himself be carried along at a mere fifteen miles an hour.

"How many are with us, Daneel?"

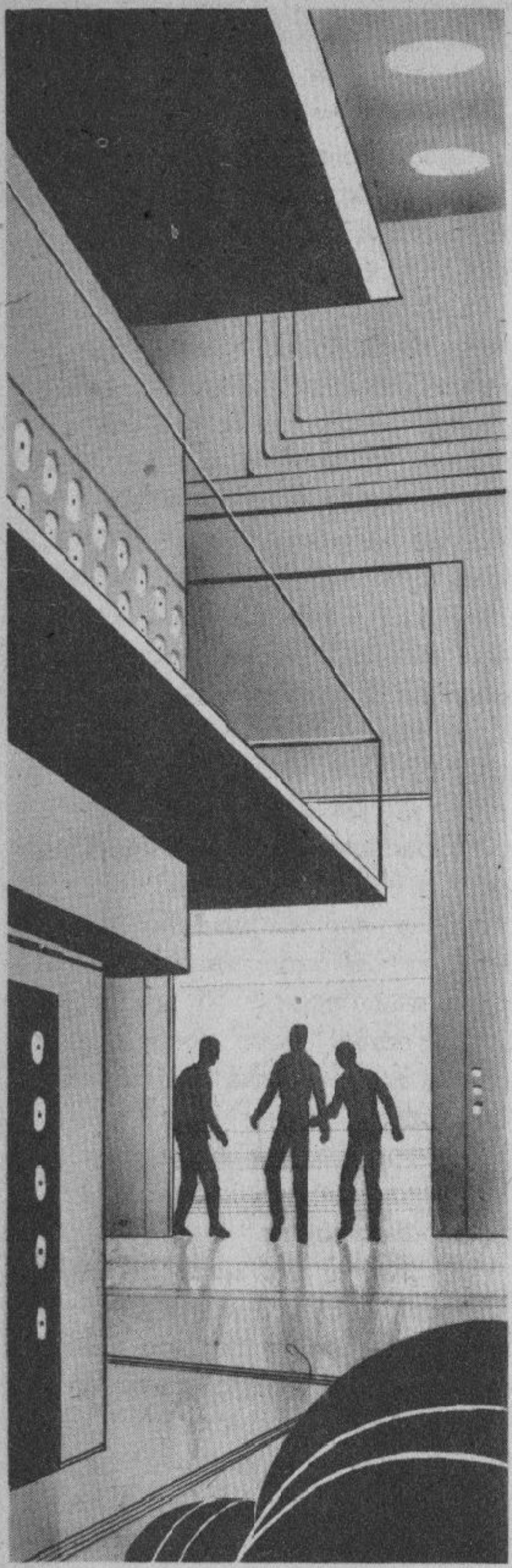
"Only one, Elijah." The robot was at his side, unruffled, unbreathing.

"He must have been a good one in his day, too, but he won't last either."

He looked about quickly. Where were they now? B-22nd Street flashed by.

He judged his steps carefully. Up the strips, smoothly and steadily, a swing onto the Localway platform and a quick wriggle to the other side.

Off he went and down the decelerating strips in a complicated pattern so that his feet met the



V-joint strips of an Expressway at the exact point of cross-over. Without loss of rhythm, he was accelerating again, then up and over an Expressway.

"Is he with us, Daneel?"

"Not one in sight, Elijah."

"Good. What a strip-runner you would have been, Daneel!"

Off onto another Localway in a whirl and down the strips with a clatter to a doorway, large and official in appearance. A guard rose to his feet.

Baley flashed his identification. "Official business."

They were inside.

"Power plant," said Baley curtly. "This covers our tracks completely."

BALEY had been in power plants before, including this one. Familiarity did not lessen his feeling of uncomfortable awe. His father had held an important job in such a plant—before a robot specialist replaced him.

There was the surrounding hum of the tremendous generators hidden in the central well of the plant; the faint sharpness of ozone in the air, the grim and silent threat of the red lines that marked the limits beyond which no one could pass without protective clothing.

Somewhere in the plant—Baley had no idea just where—a pound of fissionable material was con-

sumed each day. Every so often, the radioactive fission products, the so-called "hot ash" was forced by air pressure through leaden pipes to distant caverns ten miles out in the ocean and a half-mile below the ocean floor. Baley sometimes wondered what would happen when the caverns were filled.

He said to R. Daneel with sudden gruffness, "Stay away from the red lines." Then he added sheepishly, "But I suppose it doesn't matter to you."

"Is it a question of radioactivity?" asked Daneel.

"Yes."

"Then it does matter to me. Gamma radiation destroys the delicate balance of a positronic brain. It would affect me much sooner than it would affect you."

"You mean it would *kill* you?"

"I would require a new positronic brain. Since no two can be alike, I would be a new individual. The Daneel you now speak to would, in a manner of speaking, be dead."

Baley looked at the other doubtfully. "I never knew that. Up these ramps."

"The point isn't stressed. Spacetown wishes to convince Earthmen of the usefulness of such as myself, not of our weaknesses."

"Then why tell me?"

R. Daneel turned his eyes full on his human companion. "You are my partner, Elijah. It is well that you know my weaknesses and shortcomings."

Baley cleared his throat and had nothing more to add to the subject.

"Out in this direction," he said a moment later, "and we're a quarter of a mile from our apartment."

IT was a grim lower-class flat. One small room and two beds. Two fold-in chairs and a closet. A built-in sub-etheric screen that allowed no manual adjustment, and would be working only at stated hours, but *would* be working then. No wash-basin and no facilities for cooking or even boiling water. A small trash-disposal pipe was in one corner of the room, an ugly, unadorned, unpleasantly functional object.

Baley shrugged. "I guess we can stand it."

R. Daneel walked to the trash-disposal pipe. His shirt unseamed at a touch, revealing a smooth and, to all appearances, well-muscled chest.

"What are you doing?" asked Baley.

"Getting rid of the food I ingested. If I were to leave it, it would spoil and I would attract displeasure."

R. Daneel placed two fingers carefully under one nipple and

his chest opened longitudinally. He reached in and from a welter of gleaming metal withdrew a translucent sac, partly distended. He opened it while Baley watched with a kind of horror.

R. Daneel hesitated. He said, "The food is completely unchanged. I do not salivate or digest. It was drawn in through the gullet by suction, you know. It is as edible as if it were put through any other kind of machine."

"That's all right," said Baley gently. "You just get rid of it."

R. Daneel's food sac was of fluorocarbon plastic, Baley decided. At least the food did not cling to it. It came out smoothly and was placed little by little into the pipe. A waste of good food at that, he thought.

He sat down on one bed and removed his shirt. He said, "I suggest an early start tomorrow."

"For a specific reason?"

"The location of this apartment isn't known to our friends yet. At least, I hope not. If we leave early, we are that much safer. Once in City Hall, we will have to decide whether our partnership is still practical."

"You think perhaps it is not?"

Baley shrugged and said dourly, "We can't go through this sort of thing every day."

"But it seems to me—"

R. Daneel was interrupted by the sharp scarlet sliver of the door signal.

BALEY rose silently to his feet and unlimbered his blaster. The door signal flashed once more.

He moved silently to the door, put his thumb on the blaster contact and threw the switch that activated the one-way transparency patch. It was small and had a distorting effect, but it was good enough to show Baley's youngster, Ben, outside the door.

Baley flung the door open, snatched brutally at Ben's wrist as the boy raised his hand to signal a third time and pulled him in.

The look of fright and bewilderment faded only slowly from Ben's eyes as he leaned breathlessly against the wall toward which he had been hurled. He rubbed his wrist.

"Dad!" he said. "You didn't have to grab me like that."

Baley was staring through the view-patch of the closed door. As nearly as he could tell, the corridor was empty.

"Did you see anyone out there, Ben?"

"No. Gee, dad, I just came to see if you were all right."

"Why shouldn't I be all right?"

"I don't know. It was Mom. She was crying and all like that. She said I had to find you. If I

didn't she said she would go herself and then she didn't know what would happen. She *made* me go, Dad."

Baley said, "How did you find me? Did your mother know where I was?"

"No, she didn't. I called up your office."

"And they told you?"

Ben looked startled at his father's vehemence.

"Sure. Weren't they supposed to?"

Baley and Daneel looked at one another.

Baley rose heavily to his feet. "Where's your mother now, Ben? At the apartment?"

"No, we went to Grandma's for dinner and stayed there. I'm supposed to go back there now. I mean as long as you're all right, Dad."

"You'll stay here. Daneel, did you notice the exact location of the floor Communo?"

The robot said, "Yes. Do you intend leaving the room to use it?"

"I've got to. I have to get in touch with Jessie."

"Might I suggest that it would be more logical to let Bentley do that? It is a form of risk and he is less valuable."

Baley stared: "Why, you—" He thought: Jehoshaphat, what am I getting angry about? He went on more calmly, "You don't understand, Daneel. Among us, it is not customary for a man to send his young son into possible danger, even if it is logical to do so."

"Danger!" squeaked Ben in a sort of horrified pleasure. "What's going on, Dad? Huh, Dad?"

"This isn't any of your business, understand? I want you in bed when I get back. You hear me?"

"Aw, gosh. You could tell a fellow. I won't say anything."

"In bed!"

"Aw, yeast!"

HITCHING his jacket back, Baley stood at the floor Cummuno, his blaster butt ready for snatching. He spoke his personal number into the mouthpiece and waited while a computer fifteen miles away checked it to make sure the call was permissible. It was a very short wait, since a plainsclothesman had no limit on the number of his business calls. He spoke the code number of his mother-in-law's apartment.

The small screen at the base of the instrument lit up and her face looked out at him.

He said in a low voice, "Mother, put Jessie on."

Jessie must have been waiting for him. She appeared at once. Baley looked at her face and then darkened the screen deliberately.

"All right, Jessie. Ben's here. Now what's the matter?" His eyes roved from side to side continuously, watching.

"Are you all right? You aren't in trouble?"

"I'm obviously all right, Jessie. Now stop it."

"Oh, Lije, I've been so worried."

"What about?"

"You know. Your friend."

"There'll be no trouble. I'm keeping Ben with me tonight and you go to bed. Good-by, dear."

He broke the connection and waited for two breaths before starting back. His face was gray with apprehension and fear.

Ben was standing in the middle of the room when Baley returned. One of his contact lenses was neatly pocketed in a little suction cup. The other was still in his eye.

Ben said, "Gosh, Dad, isn't there any water in the place? Mr. Olivaw says I can't go to the Personal."

"You can't. Put that thing back in your eye, Ben. It won't hurt you to sleep with them for one night."

"All right." Ben obeyed and climbed into bed. "Boy, what a mattress!"

Baley said to R. Daneel, "I suppose you won't mind sitting up."

"Of course not. I was interested, by the way, in the queer glass Bentley wears close to his eyes. Do all Earthmen wear them?"

"Just some," said Baley absently. "I don't, for instance."

"For what reason is it worn?"

Baley was too absorbed with his own thoughts to answer. His own uneasy thoughts.

The lights were out, but Baley remained wakeful. He was dimly aware of Ben's breathing as it grew deep and regular. When he turned his head, he became conscious of R. Daneel, sitting in a chair with grave immobility, facing the door.

Then he fell asleep.

He dreamed Jessie was falling into the fission chamber of a nuclear power plant. She held out her arms to him, shrieking, but he could only stand frozenly just outside a scarlet line and watch her distorted figure as it fell, growing smaller until it was only a dot.

He could only watch her in the dream, knowing that it was he himself who had pushed her.

## CHAPTER XII

ELIJAH BALEY looked up as Commissioner Julius Enderby entered the office. He nodded wearily.

The Commissioner looked at the clock. "Don't tell me you've been here all night."

"I won't," Baley said.

The Commissioner asked in a low voice, "Any trouble last night?"

"No."

"I've been thinking that I might be minimizing the danger of riots. If there's anything to—"

"For God's sake, Commissioner, if anything happened, I'd tell you. There was no trouble of any sort."

"All right." The Commissioner moved away, closing the door that marked off the unusual privacy that went with his exalted position.

Baley looked after him and thought: *He* slept last night.

Baley hadn't. He bent to the routine report he was trying to write as a cover-up for the real activities of the last two days, but the words he had tapped out by finger-touch blurred and danced. Slowly, he became aware of an object standing by his desk.

It was R. Sammy. Baley thought: Julius's private mechanical flunky. It pays to be a Commissioner.

R. Sammy said through his fatuous grin, "The Commissioner wants to see you, Lije."

"He just saw me. Tell him I'll be in later."

"He says right now."

"I heard you. Go away."

The robot backed away, saying, "The Commissioner wants to see you right now, Lije. He says right now."

"Jehoshaphat," said Baley angrily. "I'm going. I'm going." He got up from his desk, headed for the office and R. Sammy was silent.

Baley said as he entered, "Damn it, Commissioner, *don't* send that thing after me, will you?"

The Commissioner was tapping the paper before him. "There's a record of a call you made to a Dr. Gerrigel at Washington by insulated beam."

"That's right."

"There's no record of the conversation, naturally, since it was insulated. What's it all about?"

"I'm after background information."

"He's a roboticist, isn't he?"

"Yes."

"What's the point? What kind of information are you after?"

"I'm not sure, Commissioner. I just have a feeling that in a case like this, information on robots might help."

"I wouldn't, Lije. I don't think it's wise."

"What's your objection?"

"The fewer the people who know about all this, the better."

"I'll tell him as little as I can."

"I still don't think it's wise."

"Are you ordering me not to see him, Commissioner?"

"No, no! Do as you see fit.

You're heading this investigation. Only—"

"Only what?"

The Commissioner shook his head. "Nothing. Where is *he?* You know who I mean."

"Daneel's still at the files."

The Commissioner paused a long moment. "We're not making much progress, you know."

"We're not making any. That's why I'm calling in Dr. Gerrigel."

"All right," said the Commissioner, but he didn't look as though he really thought it was *all* right.

R. DANEEL was at Baley's desk when the plainclothesman returned.

"Well, and what have *you* got?" Baley asked gruffly.

"I have completed my first rather hasty search through the files, partner Elijah. I believe I have located two people whose descriptions tally with two of those who tried to track us last night and who, moreover, were at the shoe store during the former incident."

"Let's see."

R. Daneel placed the stamp-size cards before Baley. They were mottled with the small dots that served as code. The robot also produced a portable decoder and put one of the cards into a slot. The dots possessed electrical conduction properties different from that of the card as a whole. The electric field passing through the card was therefore distorted and, in response, the three-by-six screen above the decoder was filled with words. Words which, uncoded, would have filled several sheets of standard report-paper. Words, furthermore, which could not possibly be interpreted without an official police decoder.

Baley read through the material stolidly. The first person was Francis Clousarr, age 33 at time of arrest two years before; cause of arrest, inciting to riot; employee at New York Yeast; home address; parentage; hair, eyes, distinguishing marks, educational history, employment history, psychoanalytic profile, physical profile, reference to tri-photo in the rogues' gallery.

"You checked the photograph?" asked Baley.

"Yes, Elijah." R. Daneel spoke patiently.

The second person was Gerhard Paul. Baley glanced at the material on that card and said, "This is all no good."

"I am sure that cannot be so. If there is an organization of Earthmen capable of the crime we are investigating, these are members. Should they not be questioned?"

"We'd get nothing out of them."

"They were there, both at the

shoe store and in the kitchen. They cannot deny it."

"Just being there's no crime. Besides which, they can say they weren't there. How can we prove they're lying?"

"I saw them."

"That's no proof," said Baley savagely. "No court, if it ever came to that, would believe that you could remember two faces in a blur of a million."

"It is obvious that *I* can."

"Sure. Tell them what you are. As soon as you do that, you're no witness. Your kind have no status in any court of law on Earth."

R. Daneel said, "I take it, then, that you have changed your mind."

"What do you mean?" Baley scowled at him.

"Yesterday, in the kitchen, you said there was no need to arrest them. You said that as long as I remembered their faces, we could arrest them at any time."

"Well, I didn't think it through. It can't be done."

"Not even for psychological reasons? They would not know we had no legal proof of their complicity in conspiracy."

Baley said tensely; "Look, I am expecting Dr. Gerrigel of Washington in half an hour. Do you mind waiting till he's been here and gone? Do you mind?"

"I will wait," said R. Daneel.

ANTHONY GERRIGEL was a precise and very polite man of middle height, who looked far from being one of the most erudite roboticists on Earth. He was nearly twenty minutes late and quite apologetic about it. Baley, white with an anger born of apprehension, shrugged off the apologies gracelessly. He checked his reservation on Conference Room D, repeated his instructions that they were not to be disturbed for an hour and led Dr. Gerrigel and R. Daneel down the corridor, up a ramp, and through a door that led to one of the spy-beam-insulated chambers.

Before sitting down, Baley listened to the soft burr of the pulsometer in his hand, waiting for any fading of the steady sound which would indicate a break, even a small one, in the insulation. He turned it on the ceiling, floor, and, with particular care, on the door. There was no break.

Dr. Gerrigel smiled a little. He looked like a man who never smiled more than a little. He was dressed with a neatness that could only be described as fussy. His iron-gray hair was smoothed carefully back and his face looked pink and freshly washed. He sat with prim stiffness.

He said to Baley, "You make this seem very formidable."

"It's important, Doctor. Any-

thing we say here, of course, is top secret and the City will expect you to forget it all when you leave." Baley looked at his watch.

The little smile on the roboticist's face winked away. "Let me explain why I am late." The matter obviously weighed upon him. "I decided not to go by air. I get airsick."

"That's too bad," said Baley. He put away the pulsometer, after checking its standard settings to make last-minute certain that there was nothing wrong with *it*, and sat down.

"Not exactly airsick, but nervous. A mild agoraphobia. It's nothing particularly abnormal, but it's there. So I took the Expressways."

Baley felt a sudden sharp interest. "Agoraphobia?"

"I make it sound worse than it is," the roboticist said at once. "It's just the sensation you get in a plane. Have you ever been in one, Mr. Baley?"

"Several times."

"Then you must know what I mean. It's that feeling of being surrounded by nothing; of being separated from—from empty air by a mere inch of metal. It's very uncomfortable."

"So you took the Expressway."

"Yes."

"All the way from Washington to New York?"

"Oh, I've done it before. Since they built the Baltimore-Philadelphia tunnel, it's quite simple."

SO it was. Baley had never made the trip himself, but he was aware that it was possible. Washington, Baltimore, Philadelphia, and New York had grown, in the last two centuries, to the point where all nearly touched. The Four City Area was almost the official name for the entire stretch of coast and there were a considerable number of people who favored administrative consolidation and the formation of a single super-City. Baley disagreed. New York City by itself was almost too large to be handled by a centralized government. A larger City with over fifty million population would break down under its own weight.

"The trouble was," Dr. Gerrigel was saying, "that I missed a connection in Chester Sector, Philadelphia, and lost time. That and a little difficulty in getting a transient room assignment ended by making me late."

"Don't worry about it, doctor. What you say, though, is interesting. In view of your dislike for planes, how would you feel about going outside City limits on foot?"

"For what reason?" He looked startled.

"I'm not suggesting that you

really should. I want to know how the notion strikes you, that's all."

"It strikes me very unpleasantly."

"Suppose you had to leave the City at night and walk cross-country for half a mile or more."

"I—I don't think I could be persuaded to."

"No matter how important the necessity?"

"If it were to save my life or those of my family, I might try it." He looked embarrassed. "May I ask the point of these questions, Mr. Baley?"

"I'll tell you. A serious crime has been committed, a particularly disturbing murder. I'm not at liberty to give you the details. There is a theory, however, that the murderer, in order to commit the crime, did just what we were discussing — he crossed open country at night and alone. I was just wondering what kind of man could do that."

Dr. Gerrigel shuddered. "No one I know. Certainly not I. Of course, among millions, I suppose you could find a few such individuals."

"But you wouldn't say it was a very likely thing for a human being to do."

"No. Not at all likely."

"In fact, if there's any other explanation for the crime, any other *conceivable* explanation, it should definitely be considered."

Dr. Gerrigel looked more uncomfortable than ever as he sat upright with his well-kept hands precisely folded in his lap. "Do you have an alternate explanation in mind?"

"Yes. It occurs to me that a robot, for instance, would have no difficulty at all in crossing open country."

DR. GERRIGEL stood up. "Oh, my dear sir!"

"What's wrong?" asked Baley.

"You mean a robot may have committed the crime?"

"Why not?"

"Murder? Of a human being?"

"Yes. Please sit down, Doctor."

"Mr. Baley, there are two acts involved: walking cross-country and murder. A human being could commit the murder, but would find difficulty in crossing open country. A robot could cross open country easily, but the murder would be completely impossible. If you're going to replace an unlikely theory by an impossible one—"

"Impossible is a strong word."

"You've heard of the First Law of Robotics, Mr. Baley?"

"Sure. I can even quote it: A robot may not injure a human being, or, through inaction, allow a human being to come to harm." Baley suddenly pointed a finger at the roboticist. "Why can't a

robot be built without the First Law? What's so sacred about it?"

"If you even know a little about robotics, you must know the gigantic task involved, both mathematically and electronically, in building a positronic brain."

"I have an idea," said Baley. He remembered well his visit to a robot factory once in line of duty. He had seen the library of book-films; long ones, each of which contained the mathematical analysis of a single type of positronic brain. It took more than an hour for the average film to be viewed at standard scanning speed, condensed though its symbolisms were. And no two brains were alike even when prepared according to the most rigid specifications. That, Baley understood, was a consequence of Heisenberg's Uncertainty Principle. This meant that each film had to be supplemented by appendices involving possible variations.

It was a job, all right. Baley wouldn't deny that.

Dr. Gerrigel said, "Well, then, you must understand that a design for a new type of positronic brain, even one where only minor innovations are involved, is not the matter of a night's work. It usually requires the entire research staff of a factory and takes anywhere up to a year. Even this would not be enough if it were not that the basic theory of such circuits has already been standardized. The basic theory involves the Three Laws of Robotics: the First Law, which you've quoted; the Second Law, which states 'A robot must obey the orders given it by human beings except where such orders would conflict with the First Law,' and the Third Law, which states 'A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.' Do you understand?"

R. DANEEL, who, to all appearances, had been following the conversation with close attention, broke in. "If you will excuse me, Elijah, I would like to see if I follow Dr. Gerrigel. What you imply, sir, is that any attempt to build a robot, the workings of whose positronic brain is not oriented about the Three Laws, would require first the setting up of a new basic theory and that this, in turn, would take many years."

The roboticist looked gratified. "That is exactly what I mean, Mr. —"

Baley said, "This is Daneel Olivaw, Dr. Gerrigel."

"Good day, Mr. Olivaw." Dr. Gerrigel shook Daneel's hand. He went on, "It is my estimation that it would take fifty years to de-

velop the basic theory of a non-Asenion positronic brain—that is, one in which the basic assumptions of the Three Laws are disallowed—and bring it to the point where robots similar to modern models could be constructed."

"And this has never been done?" asked Baley. "We've been building robots for thousands of years. In all that time, hasn't anybody or any group had fifty years to spare?"

"Certainly," said the roboticist, "but it is not the sort of work a roboticist would care to do."

"I find that hard to believe. Human curiosity will undertake anything."

"It hasn't undertaken the non-Asenion robot. The human race, Mr. Baley, has a strong Frankenstein complex."

"A what?"

"That's a popular name derived from a Medieval novel describing a robot that turned against its creator. I never read the novel myself. However, that's beside the point. What I wish to say is that robots without the First Law are simply not built."

"And no theory for it even exists?"

"Not to my knowledge, and my knowledge—" he smiled self-consciously— "is rather extensive."

"And a robot with a First Law built in could not kill a man."

"Never. Unless the killings were completely accidental or unless it were necessary to save the lives of two or more men. In either case, the positronic conflict would ruin the brain beyond recovery."

"All this represents the situation on Earth. Right?"

"Yes. Certainly."

"What about the Outer Worlds?" Baley demanded.

SOME of Dr. Gerrigel's self-assurance seemed to ooze away. "Oh, dear, Mr. Baley, I couldn't say of my own knowledge, but I'm sure that if non-Asenion positronic brains were ever designed or if the mathematical theory were worked out, we'd hear of it."

"Would we? Well, let me follow up another thought in my mind, Dr. Gerrigel. I hope you don't mind."

"No. Not at all." He looked helplessly first at Baley, then at R. Daneel. "After all, if it is as important as you say, I'm glad to do all I can."

"Thank you, Doctor. My question is, why humanoid robots? I've been taking them for granted all my life, but it occurs to me that I don't know the reason for their existence. Why should a robot look like a man?"

Dr. Gerrigel smiled a little. "The early literature of robotics is riddled with heated arguments over that very matter. If you would like a very good reference to the polemics among the functionalists and antifunctionalists, I can recommend Hanford's *History of Robotics*. Mathematics is kept to a minimum. I think you'd find it very interesting."

"I'll look it up," said Baley patiently. "Meanwhile, could you give me an idea?"

"The decision was made on the basis of economics. Look here, Mr. Baley, if you were supervising a farm, would you care to buy a tractor, a reaper, a harrow, a milker, an automobile, and so on, each with a positronic brain; or would you rather have ordinary un-brained machinery with a single positronic robot to run them all? The second alternative, incidentally, represents only a fiftieth or a hundredth the expense."

"But why the human form?" Baley persisted.

"Because it is the most successful generalized form in all nature. We are not a specialized animal, Mr. Baley, except for our nervous systems and a few odd items. If you want a design capable of doing a great many different things, you could do no better than to imitate the human form. Besides that, our entire technology is based on the human form. An automobile, for instance, has controls meant to be manipulated by human hands and feet of a certain average size and shape, attached to the body by limbs of a certain average length and joints of a certain type. Even simple objects like chairs and tables or knives and forks are designed to meet such requirements. It is easier to have robots imitate the human shape than to redesign radically so much of our civilization."

"That makes sense. Now isn't it true, Doctor, that the roboticists of the Outer World manufacture robots that are much more humanoid than our own?"

"I believe so."

"Could they manufacture a robot so humanoid that it would pass as human under ordinary conditions?"

DR. GERRIGEL lifted his eyebrows and considered that. "It would be terribly expensive. I doubt that the return could be profitable enough to make the attempt worth the effort."

"Do you suppose," went on Baley remorselessly, "that they could make a robot that would fool *you* into thinking it was human?"

The roboticist tittered. "Oh, my dear Mr. Baley. I doubt that.

Really. There's more to a robot than just his appear—"

Dr. Gerrigel froze in the middle of the word. Slowly, he turned to R. Daneel, and his pink face went very pale.

"Dear me!" he whispered. "Oh, dear me!"

He reached out one hand and touched R. Daneel's cheek gingerly. R. Daneel did not move away, but gazed at the roboticist calmly.

"Dear me," said Dr. Gerrigel, with what was almost a sob in his voice, "you *are* a robot."

"It took you a long time to realize that," said Baley drily.

"I wasn't expecting it. I never saw one like this. Outer World manufacture?"

"Yes."

"It's obvious now. The way he holds himself. The manner of his speaking. It is not a *perfect* imitation, Mr. Baley."

"It's pretty good, though, isn't it?"

"Oh, it's marvelous. I doubt that anyone could recognize the imposture at sight. I am very grateful to you for having me brought face to face with him. May I examine him?" The roboticist was on his feet, eager.

Baley put out a hand. "Please, Doctor. In a moment. First, the matter of the murder, you know."

"Is that real, then?" Dr. Gerrigel was bitterly disappointed and showed it. "I thought perhaps that was just a trick to keep my mind engaged and to see how long I could be fooled by—"

"It is not a trick, Dr. Gerrigel. Tell me now, in constructing a robot as humanoid as this one, with the deliberate purpose of having it pass as human, is it not necessary to make its brain possess properties as close to those of the human brain as possible?"

"Certainly."

"Very well. Couldn't such a humanoid brain lack the First Law? Perhaps it is left out accidentally. You say the theory is unknown. The very fact that it is unknown means that the constructors might set up a brain without the First Law. They would not know what to avoid."

GERRIGEL was shaking his head vigorously. "Oh, no! Impossible! A robot without the First Law? It can't be done!"

"Are you sure? We can test the Second Law, of course. Daneel, let me have your blaster."

Baley's eyes never left the robot. His own fist, well to one side, gripped his own blaster tightly.

R. Daneel said calmly, "Here it is, Elijah," and held it out, butt-first.

Baley said, "A plainclothesman must never abandon his blaster. A robot has no choice but to obey a human."

"Except, Mr. Baley," said Dr. Gerrigel, "when obedience involves breaking the First Law."

"Do you know, Doctor, that Daneel drew his blaster on an unarmed group of men and women and threatened to shoot?"

"But I did not shoot," R. Daneel stated.

"Granted, but the threat was unusual in itself, wasn't it, Doctor?"

Dr. Gerrigel bit his lip. "I'd need to know the exact circumstances to judge. It does sound unusual, I admit."

"Consider this, then. R. Daneel was on the scene at the time of the murder, and if you omit the possibility of an Earthman having moved across open country, carrying a weapon with him, only Daneel of all the persons on the scene could have hidden the weapon."

"Hidden the weapon?" asked Dr. Gerrigel. "I don't follow you."

"Let me explain. The scene of the murder was searched minutely and the blaster that did the killing was not found. Yet it could not have vanished like smoke. There is only one place it could have been; only one place they would not have thought to look."

"Where, Elijah?" asked R. Daneel.

Baley brought his blaster into view, held its barrel firmly in the robot's direction.

"In your food sac, Daneel!"

## CHAPTER XIII

THE roboticist, whose glance had been alternating wildly between the plainclothesman and the robot, let it come to rest upon the human being.

"What *is* all this?" he bleated.

"I've asked you here for an authoritative analysis of this robot," said Baley. "I can arrange to have you use the laboratories of the City Bureau of Standards. If you need any piece of equipment they don't have, I'll get it for you. What I want is a quick and definite answer, and hang the expense and trouble."

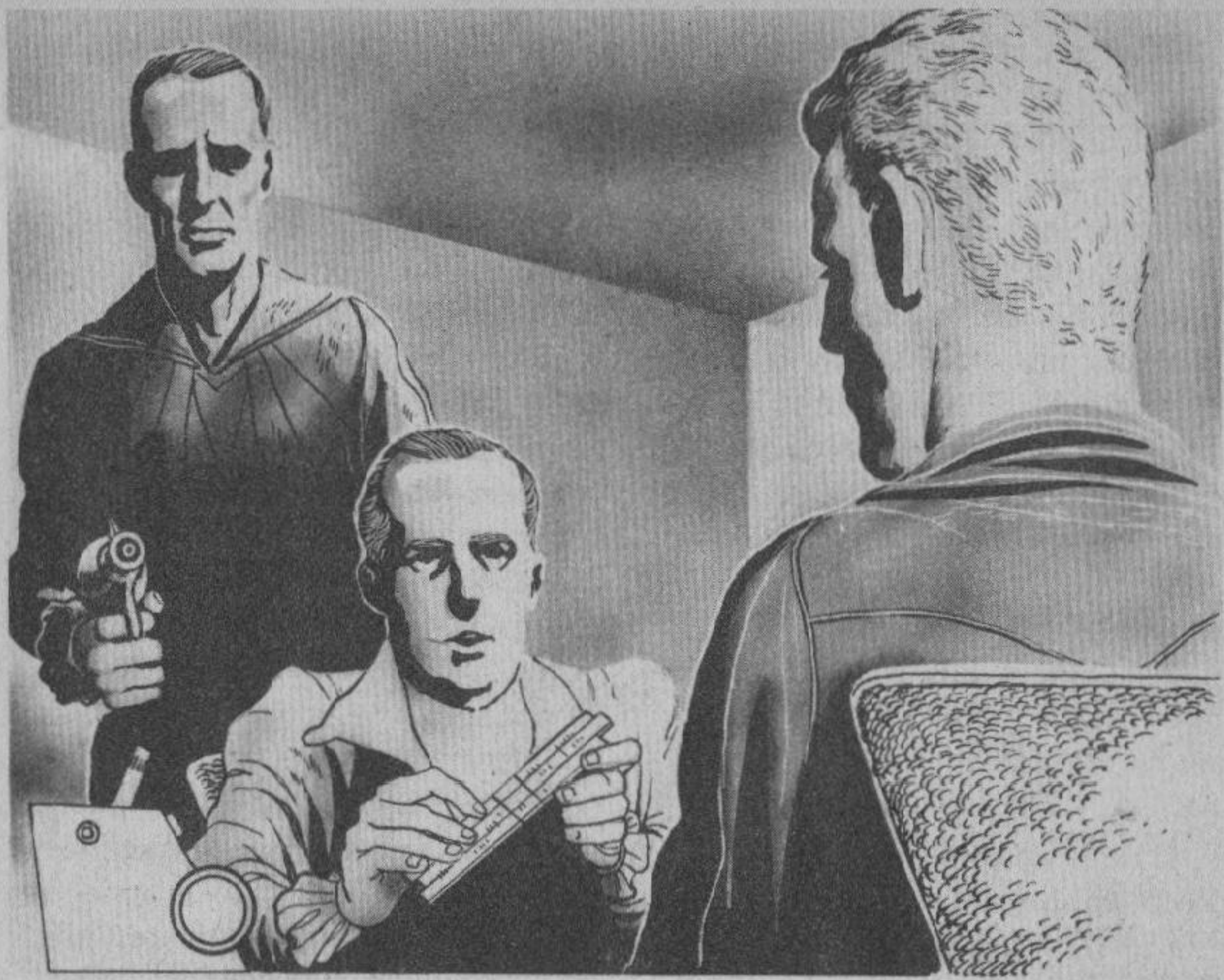
Dr. Gerrigel tittered nervously and said, "My dear Mr. Baley, I won't need a laboratory."

"Why not?" asked Baley apprehensively, muscles tense.

"It's not difficult to test the First Law. I've never had to, but it's simple enough."

Baley pulled air in through his mouth and let it out slowly. "Are you saying that you can test him here?"

"Yes, of course. If I were a Doctor of Medicine and had to test a patient's blood sugar, measure his basal metabolic rate, his cortical function, or check his genes to pinpoint a



congenital malfunction, I'd need elaborate equipment. On the other hand, I could learn if he was blind by merely passing my hand before his eyes and test whether he was dead by feeling for his pulse.

"What I'm getting at is that the more important and fundamental the property being tested, the simpler the needed equipment. It's the same in a robot. The First Law is fundamental. It affects everything. If it were absent, the robot could not react properly in at least two dozen obvious ways."

As he spoke, he took out a flat, black object which expanded into a small book-viewer. He inserted a well-worn spool into the receptacle. He then took out a stopwatch and a series of white plastic slivers that fitted together to form something that looked like a slide-rule with three independent movable scales. The notations upon it struck no chord of familiarity to Baley.

Dr. Gerrigel tapped his book-viewer and smiled a little, as though the prospect of a bit of fieldwork cheered him.

He said, "It's my *Handbook of Robotics*. I never go anywhere without it. It's like part of me."

He put the eyepiece of the viewer to his eyes and his finger dealt delicately with the controls. The viewer whirred and stopped, whirred and stopped.

"Built-in index," the roboticist said proudly, his voice muffled because the viewer covered his mouth. "I constructed it myself. It saves a great deal of time. But that's not the point now, is it? Let's see. Umm, won't you move your chair near me, Daneel?"

R. Daneel did so. During the roboticist's preparations, he had watched closely and unemotionally.

Baley shifted his blaster to keep aiming at the robot.

WHAT followed confused and disappointed him. Dr. Gerrigel proceeded to ask questions and perform actions that seemed without meaning, punctuated by references to his triple slide-rule and occasionally to the viewer itself.

At one time, he asked, "If I have two cousins, five years apart in age, and the younger is a girl, what sex is the older?"

Daneel answered, "It is impossible to say on the information given."

Dr. Gerrigel's only response, aside from a glance at his stopwatch, was to extend his right hand as far as he could sideways and to say, "Would you touch the tip of my middle finger with the tip of the third finger of your left hand?"

Daneel did that promptly and easily.

In fifteen minutes, Dr. Gerrigel was finished. He used his slide-rule for a last silent calculation, then disassembled it with a series of snaps. He put away his stopwatch, withdrew the *Handbook* from the viewer and collapsed the machine.

"Is that all?" said Baley, frowning.

"That's all."

"But it's ridiculous. You've asked nothing that pertains to the First Law."

"Mr. Baley, when a doctor hits your knee with a little rubber mallet, don't you accept the fact that it gives information concerning the presence or absence of some degenerative nerve disease? When he looks closely at your eyes and considers the reaction of your iris to light, are you surprised that he can tell you about your possible addiction to the use of certain alkaloids?"

Baley said, "Well, what's your decision?"

"Daneel is fully equipped with the First Law!" The roboticist jerked his head in a sharp affirmative.

"You can't be right," said Baley flatly.

"Are you teaching me my job?" The little smile had turned to an indignant glare.

"I don't mean you're incompetent," said Baley. He put out a large, pleading hand. "But couldn't you be mistaken? You've said yourself nobody knows anything about the theory of non-Asenion robots. A blind man could read by using Braille or a sound-scriber. Couldn't you, in all honesty, say that a man had eyes because he knew the contents of a certain book-film, and be mistaken?"

THE roboticist grew genial again. "I see your point. But a blind man could not read by use of his eyes and that is what I was testing, if I may use the analogy. Take my word for it, regardless of what a non-Asenion robot could or could not do, it is certain that R. Daneel is equipped with the First Law."

"Couldn't he have falsified his answers?"

"A human brain, or any mammalian brain, cannot be completely analyzed by any mathematical discipline now known. The robot brain is completely analyzable, or it could not be constructed. We know exactly what the responses to given stimuli must be. Therefore, no robot can falsify answers."

"Then let's get down to cases," said Baley. "R. Daneel did point a blaster at a crowd of human beings. I was there. Granted that he didn't shoot, wouldn't the First Law still have forced him into a kind of neurosis? It didn't, you know. He was perfectly normal afterward."

The roboticist put a hesitant hand to his chin. "That *is* anomalous."

"Not at all," said R. Daneel suddenly. "Partner Elijah, would you look at the blaster that you took from me?"

Baley looked down upon the blaster he held cradled in his left hand.

"Break open the charge chamber," urged R. Daneel. "Inspect it."

Baley weighed his chances, then slowly put his own blaster on the table beside him. With a quick movement, he opened the robot's blaster.

"It's empty," he said blankly.

"There is no charge in it," agreed R. Daneel. "If you will look closer, you will see that the blaster has no ignition-bud and cannot be used."

Baley said, "You held an uncharged blaster on the crowd?"

"I had to have a blaster or fail in my role as plainclothesman," said R. Daneel, "yet to carry a charged and usable blaster might have made it possible for me to hurt a human being by accident,

a thing which is, of course, unthinkable. It did not occur to me to explain that to a detective because I thought it was obvious. I still believe it is."

Baley stared bleakly at the useless blaster in his hand and said in a low voice, "I think that's all, Dr. Gerrigel. Thank you for your help."

BALEY sent out for lunch, but when it came (yeast-nut cake and a rather extravagant slice of fried chicken on cracker) he could only stare at it.

Round and round went the currents of his mind. The immediate past stretched behind him like a misty improbable dream, dating back to the moment he had stepped into Julius Enderby's office and found himself suddenly immersed in a nightmare of murder and robotics.

Jehoshaphat, it had begun only fifty hours before!

Persistently, he had sought the solution in Spacetown. Twice he had accused R. Daneel, once of being a human being in disguise, and once as an admitted and actual robot; each time as a murderer. Twice the accusation had been broken.

Against his will, he was being forced to turn his suspicions to the City, and since last night he dared not. Certain questions battered at his conscious mind, but he would not listen. If he heard them, he couldn't help but answer them and he didn't want to face the answers.

"Lije! Lije!" A hand shook Baley's shoulder roughly.

Baley stirred and said, "What's up, Phil?"

Philip Norris, Plainclothesman C-5, sat down, put his hands on his knees and leaned forward, peering at Baley's face. "What happened to you? Been living on knockout drops lately? You were sitting there with your eyes open and near as I could make out, you were dead."

He rubbed his thinning, pale blond hair, and his close-set eyes appraised Baley's cooling lunch greedily. "Chicken!" he said. "It's getting so you can't get it without a doctor's prescription."

"Take some," offered Baley listlessly.

Decorum won out and Norris said, "Oh, well, I'm going out to eat in a minute. Say, what's doing with the Commish?"

"What?"

Norris attempted a casual attitude, but his hands were restless. "You know what I mean. You've been living with him ever since he got back. What's up? A promotion in the works?"

Baley frowned and felt reality return somewhat at the touch of office politics. Norris had approximately his own seniority and he

was bound to watch assiduously for any sign of official preference.

Baley said, "No promotion. And if it's the Commissioner you're wanting, I wish I could give him to you!"

"Don't get me wrong, Lije. I don't care if you get promoted. I just mean that if you've got any pull with the Commish, how about using it for the kid?"

Baley didn't have to ask what kid. Vincent Barrett, the youngster who had been moved out of his job to make room for R. Sammy, was shuffling up from an unnoticed corner of the room. A skull-cap turned uncomfortably in his hands and the skin over his high cheek-bones creased as he tried to smile.

"Hello, Mr. Baley."

"Oh, hello, Vince. How're you doing?"

"Not so good, Mr. Baley."

VINCE was looking about hungrily. Baley thought: He looks lost, half-dead—declassified.

Then, savagely, his lips almost twisting with the force of his emotion, he thought: But what does he want from me?

He said, "I'm sorry, kid." What else was there to say?

"I keep thinking," said the boy. "Maybe something has come up."

Norris moved close and spoke into Baley's ear. "Someone's got to stop this! They're going to push out Chenlow now."

"What?"

"Haven't you heard?"

"No, I haven't. Damn it, he's a C-3. He's got ten years behind him."

"I know. But a machine with legs can do his work. Who's next, now?"

Young Vince Barrett was oblivious to the whispers. He said out of the depths of his own thinking, "Mr. Baley?"

"Yes, Vince?"

"You know what they say? They say Lyrane Millane, the dancer, is really a robot."

"That's silly."

"Is it? They say they can make robots look just like humans; give them a special plastic skin, sort of."

Baley thought guiltily of R. Daneel and found no words. He shook his head.

The boy said, "Do you suppose anyone will mind if I just walk around? It makes me feel better to see the old place."

"Go ahead, kid."

The youngster wandered off. Baley and Norris watched him go.

Norris said, "Maybe the Medievalists are right. The hell with robots. Old Earth has a better future without them."

Baley muttered, "Eight billion people and the uranium run-

ning out! What's better about it?"

"What if the uranium does run out? We'll import it. Or we'll discover other nuclear processes. We can use sun power and that's good for billions of years. We can build space stations inside Mercury's orbit to act as energy accumulators. We'll transmit energy to Earth by direct beam."

This project was not new to Baley. The speculative fringe of science had been playing with it for a hundred and fifty years at least. What was holding it up was the impossibility, so far, of projecting a beam tight enough to reach so many million miles without total dissipation. Baley said as much.

Norris argued, "When it's necessary, it'll be done."

BALEY thought of an Earth of unlimited energy. Population could continue to increase; the yeast farms could expand; hydroponic culture intensify. Energy was the only thing needed. The raw minerals could be brought in from the uninhabited rocks of the System. If ever water became a bottleneck, more could be brought in from the moons of Jupiter. For that matter, the oceans could be frozen and dragged out into space where they could circle Earth as moonlets of ice. There they would be, always available for use, while the ocean bottoms would represent more land for exploitation; more room to live. Even carbon and oxygen could be maintained and increased on Earth through utilization of the methane atmosphere of Titan and the frozen oxygen of Umbriel.

Earth's population could reach a trillion or two. Why not? There was a time when the current population of eight billion would have been considered impossible. Even a population of a single billion would have been unthinkable a couple of thousand years ago. There had always been prophets of Malthusian doom in every generation since Medieval days and they had always been proven wrong.

What would Fastolfe say? A world of a trillion? Surely! But they would be dependent on imported air and water and an energy supply from complicated storehouses millions of miles away. Earth would be, and remain, staring over the edge of disaster if any single part of the program failed. Disruption for only one hour would be catastrophic now. What would it be then? A minute? A second? Less?

Baley said, "I think it would be easier to ship off some of the surplus population." It was more an answer to the picture he had conjured up than to anything

Norris had just been saying.

"Who'd have us?" said Norris with bitter lightness.

"Any uninhabited planet."

Norris rose, patted Baley on the shoulder. "Lije, you eat your chicken, and recover. You *must* be living on knockout pills."

Baley watched him leave with a humorless twist to his mouth. Norris would spread the news and it would be weeks before the office comedians would lay off. But at least it got him off the subject of young Vince, or robots, or declassification.

He sighed as he put a fork into the now-cold and somewhat soggy chicken.

AS Baley finished the last of the yeast-nut, R. Daneel left his own desk (assigned him that morning) and approached.

Baley eyed him uncomfortably. "Well?"

R. Daneel said, "The Commissioner is not in his office and it is not known when he'll be back. I've told R. Sammy we will use it and that he was to allow no one but the Commissioner to enter."

"What are we going to use it for?"

"Greater privacy. I'm sure you agree that we must plan our next move. After all, you do not intend to abandon the investigation, do you?"

That was precisely what Baley longed to do, but he rose and led the way into Enderby's office.

The robot said, "Partner Elijah, since last night, you are not yourself. There is a definite alteration in your mental aura."

A horrible thought sprang into Baley's mind. "Are you *telepathic*?"

"No, of course not," said R. Daneel.

Baley's panic ebbed. "Then *what the devil do you mean* about my mental aura?"

"It is difficult to explain. You will recall that I was originally designed to study human psychology for our people back in Spacetown."

"I know. You were adjusted to detective work by the simple installation of a justice-desire circuit." Baley did not try to keep the sarcasm out of his voice.

"Exactly, Elijah. But my original design remains essentially unaltered. I was constructed for the purpose of cerebroanalysis."

"For analyzing brain waves?"

"Why, yes. It can be done by field-measurements without the necessity of direct electrode contact, if the proper receiver exists. My mind is such a receiver. Is that principle not applied on Earth?"

Baley didn't know. He ignored the question and said cautiously, "If you measure the brain-waves,

what do you get out of it?"

"Not thoughts, Elijah. I get a glimpse of emotion and, most of all, I can analyze temperament, the underlying drives and attitudes of a man. For instance, it was I who was able to ascertain that Commissioner Enderby was incapable of killing a man under the circumstances of the time of the murder."

"And they eliminated him as a suspect on your say-so."

"It was safe enough to do so. I am a very delicate machine in that respect."

Again a thought struck Baley. "Wait! Commissioner Enderby didn't know he was being cerebroanalyzed, did he?"

"There was no need to hurt his feelings."

"I mean you just stood there and looked at him. No electrodes. No needles and graphs."

"Certainly not. I am a self-contained unit."

Baley bit his lower lip in anger and chagrin. It had been the one remaining inconsistency, the one loophole through which a last stab might be made to pin the crime on Spacetown.

R. DANEEL had stated that the Commissioner had been cerebroanalyzed. One hour later, the Commissioner himself had, with apparent candor, denied any knowledge of the term. Certainly no man could have undergone the shattering experience of electro-encephalographic measurements by electrode and graph under the suspicion of murder without an unmistakable impression of what cerebroanalysis must be.

But now that discrepancy had evaporated. The Commissioner had been cerebroanalyzed and had never known it. R. Daneel told the truth; so had the Commissioner.

"Well," said Baley sharply, "what does cerebroanalysis tell you about me?"

"You are disturbed."

"That's a great discovery, isn't it? You're damn right I'm disturbed."

"Specifically, though, your disturbance is due to a clash between motivations within you. On the one hand, your devotion to the principles of your profession urges you to look deeply into this conspiracy of Earthmen who lay siege to us last night. Another motivation, equally strong, forces you in the opposite direction. This much is apparent in the electric field of your cerebral cells."

"My cerebral cells, *yeast*!" snapped Baley. "Look, I'll tell you why there's no point in investigating your so-called conspiracy. It has nothing to do with the murder. I thought it might have. I'll admit that. Yesterday,

in the kitchen, I thought we were in danger. But what happened? They followed us out, were quickly lost on the strips and that was that. That was not the action of well-organized and desperatemen.

"My own son found out where we were staying easily enough. He called the Department. He didn't even have to identify himself. Our alleged conspirators could have done the same if they had really wanted to get us."

"Didn't they?"

"Obviously not. If they had wanted riots, they could have started one at the shoe counter, and yet they backed out tamely enough before one man and a blaster. One *robot*, and a blaster which they must have known you would be unable to fire. They're Medievalists, harmless crackpots. You wouldn't know that, but I should have. And I would have, if it weren't for the fact that this whole business has me thinking in idiotic melodramatic terms.

"I tell you I know the type of people that become Medievalists. They're people who find life too hard for them here and get lost in an ideal world of the past that never really existed. If you could cerebroanalyze a movement as you do an individual, you would find they are no more capable of murder than Julius Enderby himself."

R. Daneel said slowly, "I cannot accept your statements at face value."

"What do you mean?"

"Your conversion to this view is too sudden. There are certain discrepancies, too. You arranged the appointment with Dr. Gerrigel hours before the evening meal. You did not know of my food sac then and could not have suspected me as the murderer. Why *did* you call him?"

"I suspected you even then."

"And last night you talked in your sleep."

BALEY'S eyes widened. "What did I say?"

"Merely the one word 'Jessie' several times. I believe you were referring to your wife."

Baley let his tight muscles loosen. He said shakily, "I had a nightmare. Do you know what that is?"

"I do not know by personal experience, of course. The dictionary definition is that it is a bad dream."

"And do you know what a dream is?"

"Again, the dictionary definition only. It is an illusion of reality experienced during the temporary suspension of conscious thought which you call sleep."

"Sometimes the illusions can seem damned real. Well, I dreamed my wife was in danger. I

called her name. That happens. You can take my word for it."

"I am only too glad to do so. But it brings up a thought. How did Jessie find out I was a robot?"

Baley's forehead went moist again. "We're not going into that again, are we? The rumor—"

"I am sorry to interrupt, partner Elijah, but there is no rumor. If there were, the City would be alive with unrest today. I have checked reports coming into the Department and there simply is no rumor. Therefore, how did your wife find out?"

"Jehoshaphat! What are you trying to say? Do you think my wife is one of the members of—of this—"

"I do, Elijah."

Baley gripped his hands together tightly. "Well, she isn't, and we won't discuss that point any further."

"This is not like you, Elijah. In the course of duty, you accused me of murder twice."

"And is this your way of getting even?"

"I am not sure I understand what you mean by the phrase. I approve your readiness to suspect me. You had your reasons. They were wrong, but they might have been right. Equally strong evidence points to your wife."

"As a murderess? Jessie wouldn't hurt her worst enemy. She couldn't set foot outside the City. She couldn't— Why, if you were flesh and blood, I'd—"

"I merely say that she is a member of the conspiracy. I say that she should be questioned."

"Not on whatever it is you call your life. Now listen to me. The Medievalists aren't after our blood. It's not the way they do things. But they are trying to get *you* out of the City. And they're trying to do it by a kind of psychological attack. They're trying to make life unpleasant for you and for me, since I'm with you. They could easily have found out Jessie was my wife, and it was an obvious move for them to let the news leak to her. She's like any other human being. She doesn't *like* robots. She wouldn't want me to associate with one, especially if she thought it involved danger, and surely they would imply that. I tell you it worked. She begged all night to have me abandon the case or to get you out of the City somehow."

"Presumably," said R. Daneel, "you have a very strong urge to protect your wife against questioning. It seems obvious to me that you are constructing this line of argument without really believing it."

"What the hell do you think you are?" yelled Baley. "You're not a detective! You're a cerebroanalysis machine like the elec-

troencephalographs we have in this building! You've got arms, legs, a head and can talk, but you're not one inch more than that machine! Putting a lousy circuit into you doesn't make you a detective, so you keep your mouth shut and let me do the figuring out!"

The robot said quietly, "I think it would be better if you lowered your voice, Elijah. Granted that I am not a detective in the sense that you are, I would still like to bring one small item to your attention."

"I'm not interested."

"If I am wrong, you will tell me so, and it will do no harm. It is only this. Last night you left our room to call Jessie by corridor phone. I suggested that your son go in your place. You told me it was not the custom among Earthmen for a father to send his son into danger. Is it the custom for a *mother* to do so?"

"No, of cour—" began Baley, and stopped.

"You see my point," said R. Daneel. "Ordinarily, if Jessie feared for your safety and wished to warn you, she would risk her own life, not send her son. The fact that she did send Bentley could only mean that she felt that he would be safe while she herself would not. If the conspiracy consisted of people unknown to Jessie, that would not be the case, or at least she would have no reason to think it to be the case. On the other hand, if she were a member of the conspiracy, she would know—she would *know*, Elijah—that she would be watched for and recognized whereas Bentley might get through unnoticed."

"Wait now," said Baley, sick at heart. "That's feather-fine reasoning, but—"

The signal on the Commissioner's desk started flickering madly. R. Daneel waited for Baley to answer, but the man could only stare at it helplessly. The robot closed contact.

"What is it?"

R. Sammy's slurring voice said, "There is a lady here who wishes to see Lije. I told her he was busy, but she will not go away. She says her name is Jessie."

"Let her in," said R. Daneel calmly, and his brown eyes rose unemotionally to meet the panicky glare of Baley's.

—ISAAC ASIMOV

CONCLUDED NEXT MONTH

# Yes! Any 3 of these Top Science-Fiction Thrillers Yours for Only $1.00 with membership

(Continued from Back Cover)

**WEST OF THE SUN** — See description on back cover.

**THE ASTOUNDING SCIENCE-FICTION ANTHOLOGY** — More than a score of best tales from a dozen years of Astounding Science-Fiction Magazine.

**OMNIBUS OF SCIENCE FICTION** — 43 top stories of startling inventions . . . of visitors from Outer Space . . . of Far Traveling . . . Adventure in Dimension . . . Worlds of Tomorrow. 562 pages.

**THE MIXED MEN, by A. E. Van Vogt** — ONE of the million planets in space is inhabited. Your job is to find out *which* one and contact these "humans." But they're ready with every trick in interstellar science to STOP YOU!

**PLAYER PIANO, by Kurt Vonnegut, Jr.** — In the Age of Electronics, machines do *everything*. And when one man rebels, even his trial is conducted by . . . *a machine!*

**THE LONG LOUD SILENCE, by Wilson Tucker** — You are a "contaminated" from a black plague bomb, and sealed off from civilization — *trapped in a primitive new society!*

**Send No Money — Mail Postcard**

IMAGINE — Any 3 of these full-size, full-length new Science-Fiction Books — yours for only $1. A $7.00 to $9.00 value! We make this amazing offer to introduce you to the new Science-Fiction Book Club.

This Club brings you the cream of the new science-fiction masterpieces for only $1.00 (plus few cents shipping charges) — even though they cost $2.50, $3.00 and up in the original publishers' editions!

***No Dues or Complicated Rules***

Each month our Editors select the No. 1 title from all the new science-fiction books. But you take only the books you want — as few as four a year. You receive descriptions of each selection in advance, and you may reject any book you please. No dues, no fees.

Take advantage of this amazing offer now! Just pick any 3 books you want — *at only $1 for all three!* You need send no money — simply mail postcard below. This offer may have to be withdrawn at any time, so mail postcard right now to **Science-Fiction Book Club, Dept. GAL-11, Garden City, N. Y.**

## WHICH 3 DO YOU WANT FOR ONLY $1.00?

**SCIENCE-FICTION BOOK CLUB**
***Dept. GAL-11, Garden City, New York***

Please rush me the 3 books I have checked below, as my gift books and first selection. You will bill me only $1 (plus few cents shipping charges) for all three, and enroll me as a member of the Science-Fiction Book Club. Every month send me the Club's free bulletin, "Things to Come," so that I may decide whether or not I wish to receive the coming monthly selection described therein. For each book I accept, I will pay only $1 plus a few cents shipping charge. I do not have to take a book every month (only four during each year I am a member) — and I may resign at any time after accepting four selections.

☐ ANTHOLOGY OF SCIENCE FICTION
☐ OMNIBUS OF SCIENCE FICTION
☐ THE LONG, LOUD SILENCE
☐ PLAYER PIANO
☐ THE MIXED MEN
☐ WEST OF THE SUN

**SPECIAL NO-RISK GUARANTEE:** If not delighted, I may **return all books in 7 days, pay nothing** and this membership will be cancelled!

Name .....
*(Please Print)*

Address .....

City ..... Zone ..... State .....

*Selection price in Canada $1.10 plus shipping. Address 105 Bond St., Toronto 2. (Good Only in U.S. and Canada)*

**MAIL THIS POSTCARD AT ONCE • NO POSTAGE NEEDED**

# IMAGINE YOURSELF
# *Marooned on a Distant Planet*
## —with no way of getting back to earth!

IMAGINE yourself one of this small band of 21st Century earth scientists . . . four men and two girls . . . "shipwrecked" on an unknown planet *billions of miles from Earth!*

Your rocket ship has hurtled through space for ELEVEN YEARS! Then the ship EXPLODES . . . destroying almost ALL of your precious supplies. You are stranded in a strange new world.

Around you are hundreds of small two-legged creatures — each carrying a barbed SPEAR! Hovering over the meadow are giant bat-like creatures with horrible wolf-heads, ready to tear you limb from limb!

And is there enough oxygen? What will you eat and drink? Which of the four men will be the fathers of the two girls' children?

You'll thrill to every page of this daring flight of imagination! Yet "WEST OF THE SUN" is only ONE of the exciting books offered to new members of the SCIENCE-FICTION BOOK CLUB. Read about the others on the inside cover . . . then PICK ANY 3 FOR ONLY $1 on this great offer!


## TAKE YOUR PICK OF *Any 3*

of these Complete New Masterpieces of

## SCIENCE-FICTION

*Yours for Only* $1.00 WITH MEMBERSHIP

**FIRST CLASS**
**Permit No. 3**
(Sec. 34.9 P. L. & R.)
Garden City, N. Y.

**BUSINESS REPLY CARD**
No Postage Stamp Necessary if Mailed in the United States

4¢ POSTAGE WILL BE PAID BY

SCIENCE-FICTION BOOK CLUB, Dept. GAL-11

GARDEN CITY, NEW YORK

Tear Out and Mail Postcard for Your 3 Books

•

*See Other Side*

# Please enter Special Gift Subscriptions

## to the following, and send gift card announcement.

Name ..... Offer No. ..... Price .....

FIRST FOLD IN

Address .....

City ..... State .....

FOLD UP

Name ..... Offer No. ..... Price .....

Address .....

City ..... State .....

Name ..... Offer No. ..... Price .....

Address .....

City ..... State .....

Name ..... Offer No. ..... Price .....

Address .....

City ..... State .....

Name ..... Offer No. ..... Price .....

Address .....

City ..... State .....

FIRST FOLD IN

Name ..... Offer No. ..... Price .....

Address .....

City ..... State .....

FOLD UP

Total .....

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

# BUSINESS REPLY ENVELOPE

First Class Permit No. 61559, Sec. 34.9, P. L. & R., New York, N. Y.

GALAXY PUBLISHING CORP.

421 HUDSON STREET

NEW YORK 14, N. Y.