

Astounding

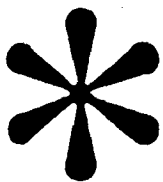
SCIENCE FICTION

SEPTEMBER 1950

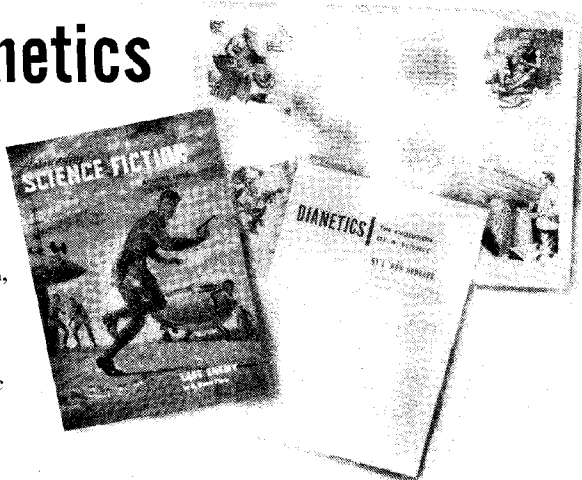
25 CENTS



THE LION AND THE LAMB by Fritz Leiber



dianetics



dianetics (Gr. dionoua, thought) — the first true science of the mind. Dianetic techniques regularly cure all psychosomatic and psychological troubles. For further information see ASF., Vol. XLV, No. 3, Pgs. 43-87.

DIANETICS started in Astounding SCIENCE FICTION.
It is not the first, nor will it be the last time, Astounding SCIENCE FICTION precedes science generally.
The articles on dianetics—pro and con—and the developments in dianetics will be appearing during the next year.
Make sure of your copies. It will, in the next year, be even harder for us to match print-order to reader demand.

Save time ➡

Save money ➡

Mail today ➡

ASTOUNDING • Box 494, Elizabeth, N. J.

Enclosed is money order or check for \$2.50* for one year subscription to Astounding Science Fiction.

Name (print)

Address

City Zone State

* \$2.75 in countries of the Pan American Union; \$3.00 in Canada; \$3.25 elsewhere.

Astounding **SCIENCE FICTION**

Reg. U. S. Pat. Off.

CONTENTS

SEPTEMBER, 1950

VOL. XLVI, NO. 1

NOVELETTES

THE LION AND THE LAMB, <i>by Fritz Leiber</i>	6
PARADISE STREET, <i>by Lawrence O'Donnell</i>	63

SHORT STORIES

THE SACK, <i>by William Morrison</i>	46
METEOR, <i>by William T. Powers</i>	107
SPY SCARE, <i>by H. B. Fyfe</i>	142

ARTICLE

WHY DO THEY DO IT?, <i>by L. Sprague de Camp</i>	121
--	-----

READERS' DEPARTMENTS

THE EDITOR'S PAGE	4
THE ANALYTICAL LABORATORY	106
BOOK REVIEW	138
IN TIMES TO COME	141
BRASS TACKS	152

Editor

JOHN W. CAMPBELL, JR.

Assistant Editor

C. TARRANT

Adv. Mgr.

WALTER J. MC BRIDE

COVER: BY MILLER

Illustrations by Brush, Cartier, Miller and Schneeman

The editorial contents have not been published before, are protected by copyright and cannot be reprinted without publishers' permission. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental.

Monthly publication issued by Street & Smith Publications, Incorporated at 775 Lidgerwood Avenue, Elizabeth, New Jersey. Reentered as Second Class matter October 19, 1948 at the Post Office at Elizabeth, New Jersey, under Act of Congress of March 3, 1879. Copyright, 1950, in U. S. A. and Great Britain by Street & Smith Publications, Inc. Gerald H. Smith, President; Henry W. Ralston, Vice-President; Ralph R. Whittaker, Jr., Vice-President; Arthur P. Lawler, Vice-President and Secretary; Thomas H. Kaiser, Treasurer. Subscriptions to Countries in Pan American Union, \$2.75 per year; \$3.00 per year in Canada, elsewhere, \$3.25 per year. All subscriptions should be addressed to P.O. Box 494, Elizabeth, N. J. We cannot accept responsibility for unsolicited manuscripts or artwork. Any material submitted must include return postage.

General and Executive offices at 122 East 42nd Street, New York 17, New York.

\$2.50 per Year in U. S. A.

Printed in  16 the U. S. A.

25c per Copy

NEXT ISSUE ON SALE SEPTEMBER 20, 1950

AST-1D

CREDIT WHERE DUE

There's a general impression that a witch doctor is a misguided quack, a man who puts on a terrific show of meaningless, pointless, and nonsensical mumbo jumbo for "curing" his fellow tribesmen. He, according to general belief, works with superstition, and is simply using the superstitious fears of his tribesmen to advance his own position.

Let's take a little different slant, and see what might be closer to the truth. First off, it was the witch and witch doctor who discovered and first introduced to medical lore digitalis for heart trouble, quinine for malaria, cascara, opium, cocaine, hashish, arsenic—as a tonic as well as a poison!—strychnine, and many another drug. Hypnotism was discovered and used ages before it was introduced to western science.

The scientific method hadn't been developed, but after all, if several thousand human beings—and usually among the smartest men of their tribe—spend a hundred thousand years trying to accomplish things, somebody, somewhere along the line, is apt to stumble across some answers. And in the course of that hundred thousand years, those items which do work will tend to be retained, and those that don't, will gradually fall away.

The old English witch who had an herb tea that cured dropsy wasn't scientific in her methods; the tea was

made up of a whole hodgepodge of herbs, leaves, roots, and what-not because she hadn't done any research to find which one did the work. Eventually an English doctor tried, by experiment, and found that the one ingredient that *had* to be present was foxglove. He did a fine piece of research; witchcraft did a better job, though—they'd found a tea, hodgepodge though it was, that successfully treated a human illness.

Let's take a bit more logical look at the witch doctor. He's a member of a culture different from ours, his methods are, on the surface, very different from that of a Park Avenue M.D. But under the surface—? When we visit other planets, with vastly different cultural patterns, it will be extremely easy to miss the validity of things they do, simply because the surface appearance is different.

A witch doctor is a human being who has devoted his life to helping his fellow tribesmen in sickness and trouble. He is, generally, a sincere, honest man, trying to do the best he can, with the means and knowledge at his disposal. He operates on the basis of certain unproven theories, based on several thousand centuries of observation. He is forced to prepare his own medicinals, and is limited, therefore, to medicinals available in his own local area.

When a sick tribesman calls on

him for help, he attends with what medicines he has. He usually has some pretty potent and effective ones, too. Witch doctors developed techniques for setting broken bones effectively, and the use of opium and cocaine to ease the pain. Witch doctors developed obsidian—natural glass—knives for surgery, and part of the technique was to chip a fresh surface on the knife just before operating. (They did it as part of a ritual; the fact that the interior of a mass of natural glass is absolutely sterile influenced them only at the observational level; patients recovered better, more often, if they did it that way.) They performed—and successfully—really major operations.

Be it noted that Semelweis, who introduced aseptic technique to prevent childbirth fever, did *not* know about disease germs. He talked about the “odor of death,” and used chlorine water not because it was an extremely powerful germicide, but because it removed the “odor of death.” Pure ritualism—superstition. But it had precisely the effect he sought, for entirely different reasons.

So what if his reasoning was wrong? He saved lives.

The witch doctor, operating without knowledge of the scientific method, drew a lot of false conclusions, developed a lot of fantastic theories—but he cured a lot of patients, also. His concoctions may have been made from stewed toad skins and tree bark and the leaves of a shrub—but the tree bark was cinchona, and the bitter teas were

bitter with quinine. He didn't eliminate the unnecessary—but many and many a time he did include the necessary.

And the devil masks, gourd rattles and throbbing drums aren't fakery. They work, and many a Park Avenue M.D. has used electrocardiographs, basal metabolism equipment, X-ray machines and the complete panoply of modern science precisely as the witch doctor uses devil mask and gourd rattle. For the neurotic patient, whose major—and perfectly real—trouble is mental—and I do *not* mean imaginary, I mean psychosomatic—the modern M.D. prescribes a thorough dose of confidence in the power and might of modern scientific medicine, plus some sodium bicarbonate, lactose, or corn starch pills, vitamin B tablets, and a learned discourse. The patient is thereby convinced that one who knows is doing everything possible to aid him. Recovery is greatly hastened.

Gourds, pebbles, and devil masks work as well as X-rays and electrocardiographic equipment in those cases. As a hundred thousand years of experiment has shown . . .

The main point is, however, that witch doctors are usually pretty sincere, hard-working men, who have some first-rate accomplishments to their credit. Because the surface form of their culture differs—the basic underlying structure seems nonsense. It isn't; most of humanity won't go on believing in something that doesn't work for a hundred millenniums!

THE EDITOR.

THE LION AND THE LAMB

BY FRITZ LEIBER

A culture is essentially the expression of an agreed-on pattern of thoughts, a pattern intended to solve the problems of living. But most problems have more than one approach to adequate solution . . .

Illustrated by Miller

The SS *Mole* FTL—Faster Than Light—ploughed through the Coal-sack. The jungle of the midship sunroom was in darkness. It was “night” for the plants that renewed the *Mole’s* oxygen. The banks of artificial sunlight that kept them alive on the interstellar voyage were switched off.

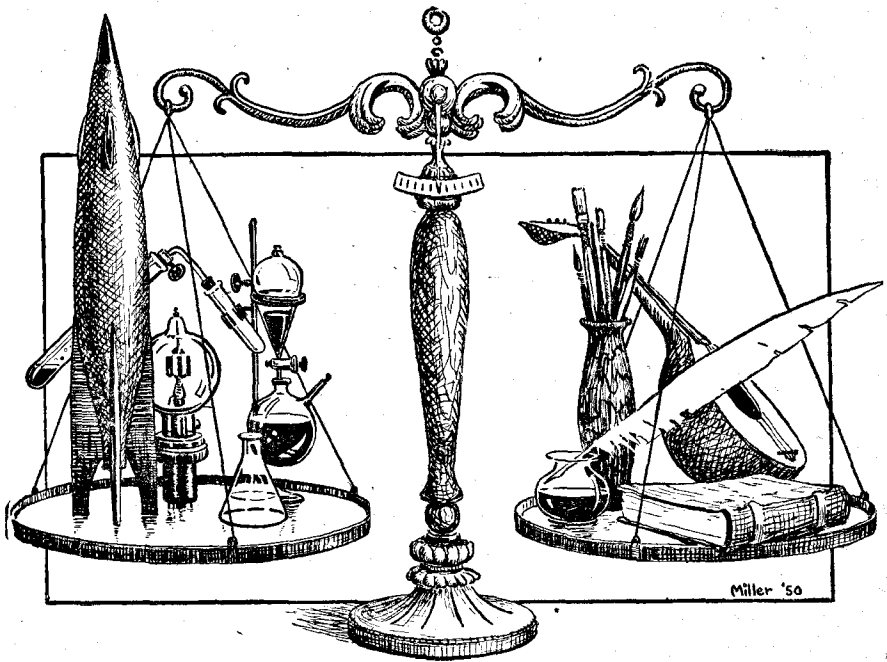
A faint glow from the dark nebular dust outside told of an approaching sun and barely outlined the lattice of narrow beams reinforcing the transparent circular wall.

Also from the dust, or through the dust, there beat another influence, intangible to the instruments of physical science—an unceasing pulse of menace.

Karl Friedrich, the *Mole’s* anthropologist and second mate, floating in the steamy darkness of the sunroom,

felt it—and was half inclined to trust his feelings. He had seen too many strange things on too many strange planets to wholly disbelieve in the supernatural, though the men who stayed close to the spaceships were apt to shrug at him. As for the home-loving citizens of the Confederacy’s civilized planets, packed on neat little spheres with their machines and offices and amusement places—and a bright little sun within nodding distance—they wouldn’t have understood what Karl was thinking about. And he wouldn’t have told them.

Gregg Dunstan, however, floating beside Karl, was no stay-at-home, and he was young enough at least to have a strong taste for the romantic. (In fact, his favorite plaint was, “I know why they talk about Mother



Earth. It's because space is so exclusively male—darn it!")

"Rather odd," Karl mused, "this endless trouble the Confederacy has with its dissident colonists and runaways. A bit like the business of getting the lion to lie down with the lamb. Or perhaps I should say the lambs with the lion."

"The Confederacy's an old March Lion," the secretary and junior astrogator answered with a chuckle. "Roaring up and down the Galaxy for its lost children, to give them a spanking."

"Or silently stalking them," Karl added, "as we are."

"Right!" The word popped loudly out of Gregg's mouth. "Inciden-

tally, what's your guess?"

Karl knew that Gregg was thinking about the scene that had just taken place in the astrogation room: the dozen pairs of eyes fixed on Master Fulson's swollen fingers as they laboriously broke open the sealed orders and placed them in the reading machine. Nevertheless he asked, "My guess about what?"

"I mean, do you think it's just these runaways that the Confederacy is afraid of?"

"Can't tell," Karl shrugged, wanting the other's impressions.

"But look at the facts," Gregg pressed. "What were these runaways? Just another bunch of dissident colonists who commandeered

an STL spaceship and dove into the Coalsack, maybe to elude pursuit, maybe because the old tub got out of control. Remember, there was hardly a technician and not a single real physical scientist among them. Just a bunch of artists, actors, psychologists, analysts . . . oh yes, and a few anthropologists."

Karl accepted the dig. "Sure, we're practically scum, our field's so far removed from the holy atom. Seems to me, though, there were some white-collars among them, too."

Gregg chuckled. "Seriously, old man, what threat could there be to the Confederacy in such a gang? I can understand the Confederacy being curious about them, now that it's gathering up loose ends a couple of centuries later. Nice to know if they found a livable planet and what sort of culture they've got and whether we can set up a research outpost there. Sure, that's understandable. But then—where's the danger?"

Karl Friedrich shrugged again. The glow barely silhouetted his slant-foreheaded profile. "Perhaps it's as you say, just a routine investigation."

"But why the business of sealed orders? Why all the hint-everything, tell-nothing warnings and cautions in those orders? Besides?"—Gregg's voice grew diffident—"you feel it, don't you?"

Both the floating men, fingers loosely hooked to handholds on the windowframes, looked out at the

black dust through which the *Mole* was burrowing.

"Yes," Karl said simply, "I do."

Gregg nodded soberly and then added without any obvious continuity—except that he was Gregg Dunstan—"Gosh, I wish there were women in space."

There was a silky rustling behind them. A figure drifted up one of the radial pathways between the ferny banks. By indefinable impressions—for all men's senses grow abnormally subtle on an interstellar voyage—Karl and Gregg recognized the *Mole's* doctor and senior biologist, Juan Galvez.

For a few moments the three men floated without speaking. There was a quality about them that would have seemed strange and even uncomfortable to an Earthman of the Twentieth or Twenty-first Century. It was the shared knowledge and experience of men who have lived in the Galaxy rather than on Earth, who have pictured their personal universe in terms of suns and planets rather than states and cities, who have known no tempo of life except the old FTL grind, who have conceived of mankind's destiny as a scramble across black space for new planets—and who now showed in their deadened eyes and taut cheeks—deadened and taut to a man of the Twentieth Century, that is, or even the Twenty-first—the indelible mark of the machine.

"How's the master?" Gregg asked Galvez finally.

"I believe I've pulled him through this attack," the Spaniard from Arcturus Quattuor replied, drifting closer. "But, as to the real nature of Pulsom's illness, I'm only groping. One thing I'm sure, the edema is no ordinary absence-of-gravity congestion. As for the heart condition, I'd swear it was psychosomatic, despite its increasing seriousness, except that I can discover no possible emotional cause—and I've checked through the tapes of his psychoanalysis."

He paused, looking out through the lattice. "But then," he went on bitterly, "who can tell what unwholesome radiations and nuclei reside in this contaminated vacuum we're penetrating? Frankly, gentlemen, I do not like this stuff." He jerked his lean chin at the dust. "Just think, we're a light-week into it! I feel I'm suffocating."

Karl Friedrich smiled wryly. "I don't know, Juan," he said lightly, "but somehow I'm almost glad not to see stars. They always make you think of planets and of people straining to keep up the old FTL grind. I'm rather grateful for the dust and the dark."

Galvez grunted tolerantly, as if willing to allow any man his space-madness, and remarked, "Well, I've never been in anything but clean space myself, and I hate these lousy ashes. You could crack up on a planet before you saw it."

"It would be bound to show up on the scopes," Gregg reminded him.

"And we've been STL for a long time."

"I suppose so," the doctor agreed moodily, "but what about the *Grimoire*?"

"The *Grimoire*?" Gregg sounded puzzled.

"Didn't you catch that in the orders? It's the name the runaways gave their ship when they commandeered it. An old Earth word, meaning a grammar—of black magic."

For a moment the three men were silent, conscious of dust and darkness—and a faint ominous pulsing that beat like tiny black waves against the shores of their minds.

"Well, what about the *Grimoire*?" Gregg asked with a touch of beligerence. "Even if she were drifting around in space, an unmanned hulk, she'd show up on the scopes, too."

"Ah!" the Arcturan Spaniard said quickly, "but suppose she'd been space-wrecked; broken open, say, by a big meteorite. Do you recall the cargo the *Grimoire* was carrying when she was commandeered?"

"Radioactive war dusts," Karl answered. "Enough to kill a couple of planets."

"Exactly!" the doctor seemed dourly elated. "Well, imagine the *Grimoire* cracked open. The dust would spread—pressure of light and all that—through *this* dust. Suppose the *Mole*, following an extrapolation of the *Grimoire's* known course, is heading into a patch of stuff like that?"

"It would show up on the Geigers," Gregg assured him.

"Even if it had spread out into a great pocket and the *Mole* heading into it?"

"Even if!" Gregg said sharply. "Besides, the stuff would long ago have lost its potency. In the silo aboard the *Grimoire* it would be kept up to full strength by breeder action. But once adrift in space . . . war dusts have a devilish short half-life, you know."

"All right, all right," the doctor allowed. "Just the same I've got a feeling."

"We all have," Karl Friedrich told him quietly. "And perhaps you've got hold of Gregg's idea."

"What's that?" Gregg asked.

"What you were getting at when we were first talking about the run-aways. The idea that it isn't the run-aways so much that the Confederacy's afraid of, as something entirely different, something working through them. Hence the secrecy, urgency, warnings, and what not. Something big, hostile—and alien to mankind."

At that moment Karl became aware of an increase in the ground-tone of pulsing menace, and he became conscious of a faint yet portentous buzzing, like that of a giant insect dozing, and of an increase of darkness and of a faint dry odor, as if dust had invaded the moist sunroom.

From his companions' indrawn breaths, he knew they were sensing something, too.

Then it seemed to Karl that the invading dust—or something—took

the shape of a preternaturally tall, hooded and cloaked human—or non-human—figure drawn back in the vegetation. And from the vague head of that figure there seemed to peer two pale eyes like tiny twin moons lost in intergalactic space. And then the buzzing seemed to shape itself into barely audible English words.

"Go back, *Mole*. Turn your tunnel and go back."

He felt Galvez's hand clamp his arm. "What is it?"

Before Karl could reply a bell shrilled through the sunroom. A trap in the ceiling opened, spilling light through the green tangle of leaves and vines, and a man dove toward them, caught a handhold in the vegetation and came to rest facing them.

"Stations!" the newcomer cried. "Takimori has picked up a planet on the next sun. Earth-size or a little bigger, about Mars-distance. Looks like this is *it*. Hey! What happened to you?"

As the newcomer asked that abrupt question, it seemed to Karl that the dust-figure, banished by the light, half reshaped itself in the shadows. And he seemed to hear the buzzing voice repeat, fainter still: "Turn your tunnel, *Mole*."

He intently watched the newcomer's puzzled face. After a moment Tauno Sweyn turned his big, strong-jawed Viking's visage toward the shadows. And as if that visage had too much of the strong spirit of science and clear-headed honesty about it, the seeming figure

grew faint and vanished, and the seeming voice trailed off to silence.

"Whew!" Gregg blew his breath out. "Oh, my space nerves!"

Karl said quietly, "We saw a ghost, Mr. Sweyn."

Galvez managed a sickly chuckle, beginning with the word ghost. "That is, we seem to have experienced a collective hallucination."

The first mate and physicist of the *Mole* looked round at them soberly. "It's not space nerves," he said, "because I saw it and heard it, too." He paused, and it seemed that the strong spirit in him swelled a little, making his Viking's visage a very incarnation of man's hard-headed, adventurous quest across the Galaxy. When he spoke again, it was with great conviction. "It's something that hates man and his methods utterly. It's something that never works our way, or with our tools. It's *anti-science*."

Three human-days — somewhat longer than Earth-days—later, Gregg Dunstan was again at the windows of the sunroom, but the scene was very different. To begin with, Gregg was standing on the floor and the *Mole* seemed suddenly crowded, its three dimensions of movement cut to two. A gravity slightly greater than Earth's tugged at his flesh and blood—elastic stockings guarded the veins of his legs. Above him, the leaves and vines sagged downward.

Outside was wonder. The dimly-revealed landscape began about fifty meters below, where the stern of the

Mole based itself. First an area blackened and bared by the *Mole's* landing jets. Then a band of trees and undergrowth flattened radially away from the *Mole* by the same blasts. Beyond that, shadowy jungle leading off into rolling hills, with here and there the glitter of flowing water.

But it was overhead and the real wonder existed. A sky that, although now reddening a little to the dawn, still showed the lacework of ten thousand meteor trails—an ever-changing diamond web.

"Beautiful," Gregg said softly. "Beautiful—as a woman."

Meteorologist Rykov nodded in appreciation beside him. "Should have known," he said, "that any planet with atmosphere in a dust cloud would have brilliant meteoric displays. Though this is beyond imagining. Lucky they're all uniformly tiny and burn out, or meteorite insurance would come high on this planet. But say, Greggie, beauty and astronomy aside, have you any new ideas on whether *that* is animal, mineral, or vegetable?"

By *that* Rykov referred to the one item that still remained from the scene three days earlier—the pulse of menace. Only now, as the flip-pant reference indicated, it had moderated. The intangible surge of horror had become an audible beat that reverberated faintly through the windows of the sunroom, a ridiculously banal sound that should only be heard in an antique adventure play about Earth's ancient Africa, a

ludicrous "BOOM, boom, boom, boom, BOOM, boom, boom, boom."

"What is it?" Rykov pressed. "I've heard Aludran drum-forests make such a racket."

"Lord knows," Gregg replied, and then his shrug turned into a lazy stretch. "But have I got planet-fever! What I'd give to go out there right now! Do you suppose there'll be any women?"

Galvez said, massaging his puffy eyelids as he came around the shrubbery, "Nevertheless, thanks to that individual—namely, Juan Galvez of that miserably provincial planet Arcturus Quattuor—you may get out of the *Mole* before noon."

"Don't we have to wait for your microbe samples to grow, so that you can give them the once-over, especially since this planet may harbor mutations of Earth microbes?"

Galvez yawned. "No need to grow cultures this trip. We have the new machine that lines up all the microbes in a sample, gives each one the spectroscopic once-over for antipathy to human protoplasm, and sorts out the suspects for individual examination. So far it's been through a hundred million or so viruses and bacteria, and I haven't seen anything that wasn't old news to me. I just told the master we were safe. Tests on radiation and atmosphere gave us an O.K. long ago, as you know, so now it's just up to Fulsom when we step out."

"How is he, by the way?" Gregg asked.

Galvez shook his head slowly, but

said nothing. The three men turned to the windows and watched the dawn come. It was far redder than an Earth dawn, more like the opening of a great furnace door. Against the glow, the hills defined themselves, strangely filmy fronds grew sharper in outline, then began to show touches of dusky green, created an impression of riot and luxury. And through all these changes there continued the mysterious but ludicrous, "BOOM, boom, boom, boom."

Suddenly Gregg electrified the others with a "Look!"

At first Rykov and Galvez could make out only the brownish glimmer of the spear points, the lighter and larger blurs below. Then they, too, began to see what Gregg was seeing.

Perhaps there were other faces peering out of the forest—they couldn't be sure. But it was undeniable that a few yards inside the clearing, a semicircle of tall, lean men stood in the flattened vegetation. They were naked except for short skirts. Each carried a spear. They seemed to be wearing hats—no, Gregg decided, headdresses of fantastic plumes. They looked strong and lithe, but uneasy.

In their midst squatted a man similarly clad except that he wore no headdress. White-haired and bearded, his gaze, like those of his escort, was fixed on the *Mole*.

He was beating a large tom-tom.

"Do you get it, fellows, do you get it?" Gregg demanded, pounding Ry-

kov's shoulder. Very likely they both did, but the young secretarial officer gave them no time to say so.

"It's the runaways! They've reverted to savagery! Being just a bunch of artists, with artists' weakness for the primitive, they speeded up the process. In a couple of generations they became prancing savages. They've come to welcome us as sky gods. No, change that—from their looks and that drumbeat I'd say they think we're bad medicine."

"Right on all counts, especially the last." The comment came from above. Karl Friedrich, knee and elbow linked around a handrail, was sliding down toward them. It was startlingly flamboyant behavior for the anthropologist.

"What do you want to know?" he announced triumphantly as he dropped beside them. "While you've been admiring meteor trails, I've had a bunch of robot television rockets scouting the neighboring villages. I've hovered over their market places. I've eavesdropped on their priests. I've watched them eat. I've peeked in their bedroom windows. I've investigated their old folks' lodges and their young folks' fraternity and sorority houses. I've even learned their language."

"In five hours?"

"Oh, it's English, of course, though of a pretty flossy sort." Karl smiled at them gayly, then got down to business. "Here's a sketch of their culture. Thatched hut stage. Matri-lineal inheritance, I think. Loose tribal structure, anarchic like some

of Earth's American Indians, with the old folk commanding respect only because of actual wisdom and skill in witchcraft. Strong emphasis on gift-giving and feasts, ceremonial dancing and athletic feats, poetry and legendry. Seem to put a very high value on beauty—physical beauty, beauty of thought, beauty in human relationships."

"Beautiful women?"

Karl grinned at Gregg, then went on, "But the most significant thing about their culture is that it's anti-mechanical. Not just unmechanical, but anti-mechanical. Absolutely no evidence of the wheel. No systematic use of the lever, as in throwing sticks, say. No bows, or twirl sticks for fire-making. No smelting of metals. Their weapons are cold-worked copper. Apparently there are pure deposits of the stuff.

"Got some direct evidence of their bias against machines. Heard part of a legend—mother telling it to a child who wouldn't sleep—in which someone got punished for trying to make a water-screw or something like that."

"Anti-mechanical," Galvez repeated thoughtfully. "Remember the expression Sweyn used? Anti-science." He caught Gregg's eye and for a moment the two men looked at each other, representatives of the FTL world of the machine come to a very different sort of place. Then their gazes stole toward the vegetation drooping above them, reddishly highlighted by the sunrise glow, but still showing great aisles of shadow.

Karl's voice called them back from their memories.

"I've saved the most interesting bit for last. In a sunken valley only twenty kilometers from the nearest village, I found a taboo area. A circle of second-growth vegetation, with some suggestive signs—including some big NO's—hacked in the surface of trees around the edge. What do you think was at the very center of that circle?"

Faintly through the windows came the vibrant, *BOOM, boom, boom, boom.*

Then Karl Friedrich told them. "The *Grimoire.*"

The bell shrilled. The four men at the window straightened. Through the sunroom Master Fulsom's voice sounded—a tired voice, with faint gasps between the phrases.

"Landing party please assemble at the lower port to disembark. Mr. Friedrich will lead."

"The idiot!" Karl said, looking back over his shoulder.

"What's wrong?" Gregg asked quickly. They had advanced a third of the way across the singed clearing. The savages had as yet shown no reaction, either hostile or friendly, except that the old man had stopped thumping his tom-tom and all of them were intently watching the approach of the *Mole's* landing party.

"I told Sweyn that machines of any sort were absolutely *out* in contacting these people, and look what the fool's doing!" Karl replied.

Gregg glanced back. One of the

Mole's copters had been wheeled out onto the upper landing stage. He could make out Sweyn's great figure, and another's.

"The master's up there, too," Gregg started to tell Karl, but then he saw that the anthropologist had his whisper-mike to his lips.

"I've talked to him," Karl told Gregg a few moments later, not looking around, keeping his eyes on the primitives. "He says Sweyn wanted the copter ready in case we were attacked. I told him to make no move in any case."

They went on, with Galvez and Rykov a few steps behind them. They were hardly a dozen yards from the edge of the clearing, but still none of the plumed men moved or changed their watchful expressions. Nor did their white-bearded leader. Despite his air of authority, he looked physically feeble—and his ribs fluted the skin below the mat of graying hair on his chest. The younger men were notable for their fine features and balanced muscular development.

Karl Friedrich's gaze wandered to the vegetation beyond them, then swung round to where a tongue of giant undergrowth stretched out into the clearing as far as the *Mole's* landing party had advanced. He looked up at one of the trees. It was covered with great tawny green and brownish leaves, like those of Earth's magnolias, but larger and semi-transparent, and splashed with violet blossoms.

As he drank in its beauty, a clus-



ter of leaves and petals softly detached itself and sailed down toward him. For an instant he watched it curiously. Then he threw himself down on the charred weeds, just as something with the form of a huge flying squirrel but a fanged feline face swooped inches above him. There was a skid and clatter of claws and he was coming up snatching at his blaster.

It is doubtful if he would have been quick enough, but fortunately there was no need. By the time the violet-splotched beast was under the sights of his blaster, it was pinned to the ground by a spear. Beast and spear were quivering.

He felt rather dazed, as if he had been suddenly transported to a dream world—of FTL human reflexes. He heard Rykov snort, evidently to Galvez, "And you said this planet was biologically safe!" He looked at the plumed men. One of them now stood a few yards ahead of the group. He no longer carried a spear. His eyes met Karl's. Both men smiled. Then the rose-plumed, purple-skirted savage took a step forward and held out his right hand in a gesture that was warm and masculine enough for all it had the grace of a ballet dancer's. Karl started toward him, holding out his own.

There was a whirring overhead and the upper half of the magnolia-like tree flashed into flame. Karl saw the smile on the savage's face turn to a look of pure horror. Then everything was wallowing confusion,

as more branches flared, as the savages fled, two of them hurling on the old man between them, and as the copter from the *Mole* buzzed down to a landing.

When Karl spoke, his voice was quite under control. He addressed himself to Master Fulsom, who was lying back in one of the seats of the copter, breathing heavily, his puffed face troubled.

"Sir, I must strongly protest this intervention. What happened was the best thing we could have wished for. There is no surer way to gain the friendship of simple people than to let them do you a real service. As an anthropologist and sapientologist dealing with savage races and species, I've even manufactured such situations. This one was Galaxy-given! But now we have been set back to the beginning—and much farther."

Mate Sweyn, standing beyond the copter, his heat gun at the ready, his eyes searching the smoking jungle, spoke without looking around. "You were obviously in danger, Mr. Friedrich."

"Danger?" Karl queried sharply. "One simple carnivore? A few simple savages?"

"Simple savages? Come, Mr. Friedrich." Sweyn's voice was tolerant. "You heard the sealed orders. You know what, ultimately, we must be on guard against." His voice grew almost genial. "And if they are simple savages, we can't risk lives like yours to placate them. There isn't an expendable man on the *Mole*,

and we *are* in the heart of a dark nebula."

Karl addressed himself again to Fulsom. "I gave you full information, sir, about the extreme anti-mechanical bias of these people. We can't hope to establish friendly relations unless we minimize in every way our dependence on machinery. Such as copters and heat guns."

Sweyn's voice was like a dreamer's. It was addressed to no one in particular, but it rang with a bitter wisdom that brought uneasiness to the hearers. "Now it begins—the temptations of anti-science."

Karl set his jaw and, disregarding the interruption, continued to speak to Fulsom. "Sir, you gave me command of this landing party. If you do not choose to revoke that command, my next order will be that it proceed with me, on foot, into the jungle."

"And into the hands of the alien," Sweyn finished for him, still restlessly eying the charred foliage.

"Please, Mr. Sweyn." Master Fulsom's voice was low but it carried authority. "I gave you no order to launch the copter. I would have stopped you except"—his swollen visage twisted in a grimace that was more than half pain—"I'm not very quick today. Mr. Friedrich, you are still under orders to establish friendly contact with the natives. Continue in your command, taking such measures as you see fit." He slumped back in the copter seat, gasping.

Sweyn spoke. "In that case I would like to join Mr. Friedrich's party."

"You may do so if you wish," Fulsom whispered, "but Mr. Friedrich commands."

Sweyn nodded. Cradling his heat gun under his right arm, he said, "Anthropologist Friedrich, consider me under your orders."

Smoky red sunlight filtered down hotly through leaves which were transparent at the topmost levels, but became opaque near the sandy ground. The trees' slender multiple trunks, arching downward like the legs of an army of giant harvestmen, were specked with barnacle-like entities which snapped at tiny octopoid creatures which spun swiftly by them on outstretched tentacle tips, riding the slender trunks like monocyclists ride tight wires. There were many other insect-size creatures, some of them aerial. Now and then one variety would come lazily twirling down on living helicopter vanes. Others would squirm to the topmost branches. There, under the bright blue-green sky which nevertheless flashed with an occasional meteor trail, they would inflate opalescent bladders and then come jetting down in seemingly erratic sweeps, like toy balloons deflating, to land with unexpected accuracy on the leaves or branches harboring their prey.

These jet-propelled bugs were the only ones which much annoyed the party from the *Mole* making its way along the trail below. At frequent intervals they would land with disconcerting *plops* on transparent cov-

erals, perhaps mistaking them for some favored flower or shrub, since on this planet many blooms and plants, and even animals, seemed to be transparently packaged by nature. The creatures seemed harmless however. After clinging for a few seconds, they would drop off and squirm away.

Karl Friedrich and his party moved along cautiously, scanning the gaps in the looping tree stems and the branches above as well. Yet when the thing happened, they were taken completely by surprise.

It was like a theatrical illusion. One moment the trail ahead was bare, as they entered a slightly darker area where the leaves were more opaque, though riddled with tiny holes.

The next moment they faced, across a red-speckled bower, the white-bearded man, fierce-eyed and cadaverous, flanked by the menacing brownish spearpoints of warriors half-concealed.

Karl and the others stopped dead. At close range, the bare-chested savages seemed, if anything, more magnificent physical specimens—and their leader more eerily impressive.

He suddenly raised his hands to either side in a proud gesture and brought them down slowly. The spearpoints followed them. Then he spoke.

“Oh Men of the Magic Tower, served by demons inhabiting dead matter, what is it that you seek?”

His English was reasonably clear, though some of the pronunciations

were strange. It had the lilt of poetry. He might have been some ancient Druid bard who had sought to purify his spirit with starvation—except that closer examination showed that his thinness was unhealthy and his skin-color not altogether wholesome. His eyes were dark-circled and the bones above the sunken cheeks seemed about to break through the hectic flesh.

Yet there was power, grandeur, too, in the way he held himself. Even when, at the end of his short speech, he broke into a fit of coughing, he did not lose dignity. Controlling the spasm quickly, he made a rapid gesture.

Instantly two young women came out of the jungle behind him. They were every whit as perfect specimens as the spearmen, only showing a daintier grace in their movements. Instead of plumes, their hair was dressed in elaborate, gleaming puffs reminiscent of the Twentieth Century. Otherwise they were garbed precisely as the warriors.

All of Karl Friedrich's party observed them with some interest, but Gregg Dunstan was by all odds the most impressed.

One girl carried a stool covered with some dark green fur, the other a small semitransparent gourd and napkin. With a “By your leave” glance at the men of the *Mole*, the old man seated himself. The second girl wiped his lips with the napkin, then offered him the gourd. He grimaced humorously, as if to show that this was medicine and not some

refreshing drink. Then he sipped briefly. The girl wiped his lips and dropped back.

The old man spoke again. "Men of the Silver Tower built in a single night out of thunder and flames, why have you entered our woodlands? Why do you desecrate their sanctity with things of demon-possessed dead matter?"

In the silence one of the jetting bugs plopped loudly against Karl Friedrich's coverall. Disregarding it, he took a step forward and bowed. "Wise and venerable one," he proclaimed, "we come from a far land, seeking only your friendship and to trade such objects and ideas as may seem wholesome to us both. It is true that we are served by demons animating dead matter, but we will not permit them to invade your woodlands. They are utterly obedient to our wills."

"Are they?" the old man demanded sharply. "The giant demon whirlbug came against us and spat flame at our forest." The warriors behind him nodded vehemently.

"That was a misfortune due to our lack of knowledge of your country and customs," Karl replied. "It will not occur again. Our own chief is sick, so that he cannot walk, yet he wished very much to visit you when you appeared at the edge of the clearing around our . . . magic tower. The whirling silver demon was only a servant-thing to bear him effortlessly through the air. Yet I, knowing a little of your customs, warned

him that he must not approach you with it. And while he watched, hating the sickness that holds him helpless, we others walked out to bid you welcome."

"We made no warlike move," the old man reminded him. "I beat the drum, but only to protect us against the demons we knew might lurk in your magic tower."

"It is true," Karl agreed. "But when the violet-spotted beast sprang at us, our chief thought was that our lives were in danger. He did not realize that, because of the great skill and swiftness of your spearmen, our lives were perfectly safe. So he bid the whirling silver demon bring him swiftly down to us, but only because he is a good chief and ever thoughtful for the lives of his men."

The old man looked at him skeptically. "But it was *after* the leopard-bat was dead under our spears that the demon came whirling down. Also"—he looked at Sweyn cradling his heat gun—"I thought it was *he* who was the demon's real rider—and he, too, who bade the demon send evil heat against our treetops, so that the leaves blackened and the b'loon-blooms frizzled and popped like bladder-bugs in a campfire."

Sweyn kept a poker face. Karl cut in quickly, "He only feared that there might be more leopard-bats hiding there. As I first told you, it was an unfortunate mistake. Henceforth we will keep our demons penned in our tower and will not permit them to hurt you."

"They have already," the old man

replied shortly. "Stand forward, Shurand."

One of the warriors glided forward. His left arm, raised for all to see, was swollen and crossed by an ugly dark streak bordered by angry red flesh. His comrades shot hostile looks at the man of the *Mole*.

"Shurand watched from the trees when the heat-tongue licked out from the whirling demon," the old man explained. "Were it not that he is above all others swift in the branches, he would have paid with his life."

"We are sorry for it," Karl assured him, bowing his head. Then he shot a quick glance behind him at Galvez, got an answering nod, and continued, "To show our good will toward you, may we heal his wound?"

"We have our own medicaments and do not hanker after demon cures," the old man replied and waved the warrior back again, then motioned the girl to give him the gourd again. She complied prettily. She was a redhead and it was on her, rather than on the equally handsome brunette beside her, that Gregg was concentrating his attention.

As the old man handed the gourd back to her, there was a whiffle of leaves, and something like a transparent, spike-tipped basketball with several eyes—or pale purple dots—shot out of the jungle and darted in erratic rushes toward the old man. Sweyn swiveled round his heat gun, but as he leveled it, the old man's

gaze flared at him, and he froze woodenly.

The animated basketball stopped by the old man's ankles and he leaned over and patted it, still glaring at Sweyn. It was shrunken compared to its first appearance and it had a skinny body of a sort inside its transparent balloon, which pulsed rhythmically as it reinflated. The old man's pats made a faint drumroll on it.

Karl turned toward Sweyn. The first mate was still frozen in his position. His face was flushed.

The old man spoke. "It is often difficult to tell whether something is a pet or a danger. Among strangers, it is well to wait." He looked at Sweyn, then looked away from him and the latter unfroze.

There was an uncomfortable pause which Karl broke by saying, "I am sure, old man, that there is wisdom in all that you say. But we, on our part, are not devoid of sense, good manners and honor. I give you my solemn promise that so long as we are in your land"—here he shot a quick, tight-jawed look at Sweyn—"we will keep all our demons penned up in the magic tower."

"But you are not your chief," the old man reminded him. "Would your chief give that promise?"

"I speak for him, with his full authority."

"I grant you speak with sincerity, still you are not your chief. Moreover, is it in your power, or your chief's power, to keep such a prom-

be? You say you can control your demons, but can you? In our experience, the demons inhabiting dead matter corrupt men." Here he shifted his gaze to Sweyn. "The men become the demons' slaves, seeking only to establish the tyranny of the demons throughout the length of the world, until all true life is dead and dead matter reigns in a realm devoid of beauty and wonder.

"For, oh man in the b'loon-bloom suit, long ages past we lived in such another magic tower, slaves of demons and corrupted by all manner of evils. But we escaped and swore an oath for all times that we would have no more to do with the demons inhabiting dead matter, nor ever again avail ourselves of their tainted power, nor ever again set foot in the old tower. And we have kept that oath. Living in our woodlands, we have striven constantly to avoid the calling up of even the feeblest and most harmless-seeming of the demons inhabiting dead matter—since it is in the nature of man to be tempted to summon or create such things. Instead, we have sought to cultivate simpler powers."

He did not specify what those powers were. Nevertheless, there was no denying that at that moment, despite his frailty and appearance of ill-health—he was panting a little after so many words—he looked a man of might. Perhaps it was that there seemed to be a harmony between him and his warriors—yes, and the whole jungle around them and the creatures inhabiting it.

Karl Friedrich nodded. "I respect your wishes and your ways. But as to your suspicions of us, I can only repeat that you have my promise. Something stronger than that I cannot give."

The old man looked at him. "I like you," he answered simply, "and you make fair speech. Yet you are not your chief, and through your demons one of us has suffered hurt. Moreover, I do not like the spirit I sense in some of you. And I am alarmed by the swift growth of your tower—it is as if our old tower had spawned. And I am disturbed at the small weapons you carry at your sides and he"—looking at Sweyn—"in his arm. They may merely be clubs—and they may not. When my b'loon cat came, *he* did not handle his as if it were a club. The demons inhabiting dead matter assume many forms. Nevertheless—" And signing for silence, he bowed his head in thought.

At that moment Gregg at last caught the eyes of the redhead. He risked a smile, faint but very admiring. She hesitated, then gave him back the smile, which on her lips was quick and silky, and turned innocently away. Gregg rocked back on his heels, dazed by his success.

The old man looked up. He spoke briskly. "I must learn more of you. I must speak with your chief. Therefore I, Firamthoth, invite you to a banquet at our village tomorrow sunset. You will be treated as honored guests. You have told me that your chief is ill and cannot walk and so

we will provide conveyance for him. No, we cannot yield our privilege to dispense hospitality in our own woodlands. Meanwhile, I enjoin you to return to your magic tower and to remain there, or in the open space around it. On our part"—here he rose to his feet—"I, Firamthoth, declare that same space taboo to all our people. You are granted safe-conduct to our village tomorrow sunset, and safe-conduct back again, whatever the issue of our speaking together."

He laid his hand on his heart. Those behind him imitated his gesture.

"This we swear."

At last the vast silver spindle of the *Mole* showed up through the filmy treetops, a heartening sight to Karl Friedrich's party.

"Say, it does look like a tower!" Gregg observed. "Quite a lot easier to imagine it being built by genie than coming down from the skies hind-end-foremost with a flaming tail."

Karl nodded. "For a while old Firamthoth really had us in fairyland. Spaceships were towers and helicopters, chimeras. One must admit that the anti-machine obsession of these people showed up at every point. Don't you think so, Mr. Sweyn?" he continued, addressing himself to the mate. "By the way, Mr. Sweyn," he added, "I'm grateful to you for your quick thinking in not shooting the old guy's pet—that is, if it was your quick-thinking?"

He paused and when Sweyn didn't reply, he went on, "And in any case I'm grateful to you and for your cooperation and protection."

Sweyn, stepping into the clearing, nodded briefly. "Mr. Friedrich," he said, "I quite realize my protection was inadequate. It's quite true, as you surmise, that it wasn't my quick thinking, or any anthropological consideration for the feelings of savages, that saved the old guy's pet. Some force outside the sort of science we know, stopped my finger." He paused. "I've formed my opinion of these folk, Mr. Friedrich," he said quietly. "They're no savages. They don't use reality as we do. Or rather, something uses them . . . you see, I've kept the Confederacy's orders in my memory. It's all right. There are ways in which matter can oppose mind on its own level." And he strode on.

Karl frowned, shrugged, and fell back beside Galvez, who remarked quietly, "That little display of primitive hypnotic power back there rather bothered our Mr. Sweyn."

Karl shrugged and remarked, "Firamthoth was certainly an impressive old duffer."

"But a very sick one," Galvez interposed.

Karl looked at him questioningly.

"Oh yes," the doctor confirmed. "Miliary tuberculosis without a doubt. Whatever his 'medicaments' are, they don't seem equal to that. He'll be dead inside a month."

Karl frowned. "I hope we can per-

made him to let you work on him. I suppose—”

“Oh sure, I can cure him easily enough—if he’ll let me. I only wish—” Galvez didn’t finish, but Karl knew he had been going to say, “I only wish I could cure *our* chief as easily as that.”

“By the way,” Karl asked softly, “just how badly off is Fulson? Sweyn’s a crackerjack physicist and darn good first mate out in space, but this thing here is awfully ticklish to deal with.”

Galvez shrugged. “Fulson’s not good,” he said somberly. “Now that we’re in gravity, I’m surer than ever that Fulson’s edema is no ordinary space-congestion. Though, of course, those space ailments linger. But I really think it’s an emotional cause—except I can’t touch it.” He looked at Karl and shrugged. “I’m really out of my depth, I’m afraid. Sweyn may be captain of the *Mole* tomorrow—or a year from now Fulson may still be master.”

Karl nodded and they set out after the others across the seared clearing.

“Well, at all events I hope old Firamthoth relents and lets you have a go at him,” Karl remarked in a louder voice. “I’ve developed an affection for the old duffer. It really got me when he put his hand to his heart.”

Carlo Baldini, the *Mole*’s cook and junior biologist, liked children. Moreover, he knew children. So, although he had heard the whole story

of the landing party and of the taboo put on the area around the *Mole*, he was not in the least surprised when, next morning at sunrise, he glanced out of the galley and saw a half dozen sun-tanned, naked little urchins standing in a row ten yards from the *Mole* and gazing up at it solemnly.

It was an hour to breakfast. Carlo thought for a moment, then smiled happily. A couple of minutes later he stepped out on the lower landing stage, looked up casually at the dimming meteor trails, then slid to the ground. In his left hand he carried a large magnesium case. A slim hose snaked down after him.

Once on the ground he opened the case and busied himself with its contents. He paid no attention to the children. He knew without looking up that they had started to run away as soon as he had stepped onto the landing stage. He also knew that they would shortly be edging back. When he finally did glance up they were once more standing in a row, hardly ten feet from him.

He took from the case a Cenaurian *inkra* fruit, succulent, and light as a litchi nut from China on old Earth. He squeezed it, sniffed it appreciatively, then tossed it up in the air.

It didn’t come down. The blast from the air hose in Carlo’s left hand kept it bobbing a couple of feet above his head.

The children watched intently. Carlo thought, *Good old Bernoulli’s Theorem, always good for a couple of tricks.*



Manipulating the air hose expertly, he made the *inkra* travel slowly through the air and land at the feet of one of the children—a handsome little tike a bit larger than the others.

Carlo motioned him to pick it up and eat it. The child looked at it, but did not stoop. Instead he looked at Carlo in a curiously wise way, tapped his small chest, and introduced himself. "Me . . . Mi-ki."

Carlo followed suit. "Me . . . Carlo." Then his hand dipped into the case and came up with a ball of steel wool. He tossed it to Miki, shook his finger when the latter

started to put it to his lips.

Miki examined the ball carefully, pulled at it. The other children crowded around curiously. Carlo held out his hand, palm upward. Miki looked at him questioningly, glanced down at the ball. Carlo nodded and wagged his outstretched hand. Miki came a couple of steps toward him, then tossed back the ball.

Carlo caught it in his left hand. His right now held an implement looking like a spray gun. He tossed

the ball into the air, pointed the gun at it. Apparently nothing came from the nozzle, but with a blinding white flash and a perceptible puff of heat, the steel wool vanished.

Carlo studied the solemn, but appreciative looks on the faces of the children. Now that just goes to show, he thought, if those were adults, they'd doubtless have beat it, scared to death. But children will accept anything. No matter what adults have been trying to make them afraid of—machines, ghosts, the supernatural—children live in a world of wonder where the impossible is happening all the time. Karl Friedrich's a good man, but if I were an anthropologist, I'd work through the children every time.

Miki was looking at him intently. It occurred to Carlo that with his dark skin, large eyes, and solemn imperturbable manner Miki would have made a good Hindu prince. He dipped again into the case.

This time he came up with a large glass mug. Into it he put, successively, two large irregular white globs, thick rich brown fluid, and a thinner white fluid. He held it up before the children. The layers of ice cream, chocolate syrup and milk stood out distinctly. Holding the mug by the handle, he directed the gun at it. The stuff inside began to churn violently, assumed a uniformly light color and frothed to the top.

Ultrasonic waves were really quite versatile things, Carlo thought.

Mix a soda as easy as ignite steel wool.

He handed the soda to Miki, who observed it gravely, sniffed it. Then Miki held it out to the others for a similar inspection.

Carlo made drinking-motions with his hand and nodded and smiled encouragingly.

Miki nodded. He did not, however, taste the soda. Instead he looked at Carlo quietly.

Suddenly Carlo felt a bit queer. This Miki was certainly an odd child! But then all children were a little odd—weren't they? He knew children—surely he did.

Still holding the soda, Miki pointed at Carlo, then at himself, then held up a finger for attention. His eyes held Carlo's. They were rather large strange eyes, Carlo realized uncomfortably. And there was something strange about Miki's grave-ness, not the graveness of a child imitating the gravity of an adult, but just Miki being himself.

Miki lowered his finger. Before he realized it, Carlo was looking at the object at which it was pointing.

The *inkra!*

A clod of dirt under the *inkra* must have crumbled at just that moment for it rolled a little. Carlo was annoyed at the way he jumped.

But the *inkra* kept on rolling.

Toward Carlo.

Suddenly it leaped into the air and darted toward his hand.

As if it were the head of a poisonous snake, Carlo jerked away.

He heard it strike a fin of the *Mole* behind him.

What he would have done at the moment if he had been left to his own devices, Carlo could never afterwards be sure—for Miki's finger was pointing again, and Carlo's gaze had to follow it.

Carlo felt a perceptible puff of cold. Then, on the ground, at his feet, he saw an intact ball of steel wool.

But Miki was pointing again.

At the soda.

It began to churn.

When Miki handed it gravely to Carlo, the layers of ice cream, chocolate, and milk stood out distinctly. Carlo could even see tiny crystals where the scoop had jagged the frozen cream.

At that moment, those tiny crystals seemed to Carlo Baldini the most impossible and therefore horrible thing in the universe. He made a gulping sound, turned around, fought his way through air, grabbed the ladder of the landing stage and collapsed against it.

A few moments later he felt strong enough to start climbing. When he had his hand on the port, he screwed up his courage to look back.

The children were gone. Everything else was just as he had last seen it. Including the soda, which was sitting on the ground beside his case.

Even at this distance he could see the separate white, brown and white layers.

Karl Friedrich, waking early, though not quite as early as Baldini, and hurrying down to examine some of the less pressing robot-televisings he'd left over from yesterday, was startled to hear Gregg Dunstan's voice coming out of the suit locker beside the landing port.

"These are spacesuits. You wouldn't ever need one."

Karl stopped, silent in his regulation slippers of Fomalhautian spongoid.

"And this rack here is blasters, in case the natives are unfriendly. But it's my wonderful luck that they are not."

Karl wrinkled his forehead.

"And this is me, just a very ordinary Joe from Giansar Duo, but terribly grateful for a bit of heaven."

Karl opened the door of the suit locker. Gregg and the red-headed girl, who yesterday had managed the gourd for old Firamthoth, swung apart.

"Mr. Dunstan," Karl said sharply.

"Yes, sir," Gregg replied smartly.

Somewhat at a loss, Karl turned to the girl. "Young lady—" he began.

"My name is Gey," the red-haired girl interposed helpfully.

"I believe you are breaking a taboo," Karl finished severely.

Gey shrugged, a shade scornfully. "Taboos are for men," she said.

Karl turned back to Gregg. "How did you bring her aboard, Mr. Dunstan?" he inquired.

"He didn't," Gey interposed again.

"I came." Karl looked back at her. "Oh yes, I just stood outside. I knew he'd be watching."

"Weren't you afraid of the demons?" Karl asked, a little acidly.

Once more Gey shrugged. "Demons are for men, too. I knew that as soon as he saw me he'd let me in."

"Very well," Karl said. "And now he'll let you out. Mr. Dunstan, open the landing port."

"Men worship demons and taboos," Gey remarked sulkily. At the foot of the ladder, she looked up at Karl enigmatically. "I've a sister called Fey," she informed him. Then she scampered off toward the jungle.

Karl turned to Gregg. "Mr. Dunstan," he said severely, "you've been told, but you seem to have forgotten, that friendly—and I mean by that honor-bright—relations with the natives are essential to the success of any expedition of this sort. If there's one thing that primitive peoples are touchy about, it's the honor of their women. Your actions might have had—and still may have—serious consequences. However, since it was chiefly on this girl's initiative that all this occurred, I'm willing to forget the matter. Provided you give me your word you won't attempt to communicate with this girl Gey, and that under no circumstances you'll let her into the *Mole*."

"I give you my word, sir," Gregg snapped, red-faced.

"Very well, Mr. Dunstan," Karl snapped back. Then he relaxed.

"And let me assure you, Gregg, I'm sorry I woke up so early."

Mate Tauno Sweyn didn't wake at all, because he hadn't been asleep. He looked down at the tiny black box on his laboratory table, and at the other objects he'd been fabricating, and smiled with cool and impersonal satisfaction. Then he put away his tools and wiped his hand across his big forehead and went to the wall and switched on the window and looked out at the jungle, its glassy upper fronds swaying in the red sunlight, its lower reaches lost in darkness.

"There they are," he grunted softly, "the powers Fulsom and Friedrich think might be friendly. Might! As if there were any power in the universe friendly to man. Old Darwin knew. As if mind weren't always tearing at matter, seeking to destroy it. Old Freud knew. And as for the minds of beings other than man—" Sweyn laughed bleakly and glanced back at the table. "But we're not altogether without resources, whatever romance-baited traps we fall into."

A dust-dimmed sunset sent its bloody rays across the silvery metal of the *Mole's* landing stage. Mate Sweyn, bleak as a Norse God on the eve of Ragnarok, looked at Master James Fulsom resting on the arms of Karl Friedrich and Gregg Dunstan.

"Sir," he said, I'll speak as frankly as I always do. It's the most

dangerous folly for you to go to this so-called banquet and put yourself into the hands of these primitives. Mr. Baldini's experience—to say nothing of the things we saw on the *Mole* before we landed—is more than sufficient evidence that these folk are concealing powers of which we, with all the might of our physical science, may well stand in dread. Powers which, I firmly believe, constitute an immediate menace to the Confederacy. These are no simple savages, sir."

Master Fulsom, slumping puffy-faced, hardly looked up. "You exaggerate, Mr. Sweyn," he said.

Sweyn did not change expression. "I believe in electrons and atoms," he said. "They're the cosmos I know. Anything that's outside that cosmos is against me—and against the Confederacy. Sir, we've had evidence—from Baldini and others—that there's a power here that's other than atoms and electrons. We've had evidence that there's a power here that's anti-human—that's anti-science."

"Please, Mr. Sweyn," Fulsom said with difficulty. "The evidence . . . isn't all in."

"Nevertheless," Sweyn continued coolly, "my advice to you is: Destroy this planet and all on it, for the sake of mankind and the Confederacy."

Fulsom looked up at his mate from under swollen lids. "That's too much, Mr. Sweyn," he whispered. There was a pause. Then Fulsom turned to the man on his right.

"Mr. Friedrich," he said, "are we all here?"

"All except Mr. Aakimori and Mr. Rykov," Karl told him.

"Send someone back into the *Mole* to hurry them up."

Sweyn coughed. "That would be futile," he said. Mr. Takimori and Mr. Rykov are not aboard the *Mole*."

As Fulsom turned toward him, Gregg announced, "Say, there are our hosts." And he pointed toward the edge of the clearing, where a file of feather-bright primitives was emerging from the jungle, first spearmen, next four bearing a roofed litter.

"Yes, Mr. Sweyn?" Fulsom asked.

"This afternoon," Sweyn said slowly, "you were incapacitated, sir. In a coma, to be precise. Assuming command, I sent Mr. Takimori and Mr. Rykov to a certain place, in order to secure our safety. They are there now."

"And that place is, Mr. Sweyn?"

"Aboard the *Grimoire*."

Karl Friedrich looked at him. "You've broken the truce I agreed to."

Sweyn smiled. "I do not think so, Mr. Friedrich," he said. "We agreed to stick to our territory: The *Grimoire* is a thing of space, and a ship of the Confederacy—hence our territory."

"They're here," Gregg called from the edge of the landing stage. "The litter's empty. I think it's intended as your conveyance, Mr. Fulsom."

Karl spoke to Fulsom rapidly. "I'm not sure any longer it's advis-

able for you to go, sir. Our hosts may well have learned of Mr. Sweyn's seizure of the *Grimoire*—and misinterpreted it."

Fulsom lifted the eyelid on Karl's side. "We will keep our agreement with them, Mr. Friedrich," he said. And he lurched toward the ladder. Karl and Gregg handed him down. The others clambered after. Mate Sweyn stayed until the end, then shrugged, touched the blaster at his belt, and followed.

"It is a peaceful and beautiful picture, don't you agree, oh Man of the Silver Tower?"

"Peaceful and pretty as a Schliengen snapshot of an explosion front!"

Karl Friedrich nodded pleasantly at Firamthoth's comment, guiltily ignored Sweyn's harsh whisper. As if he did not have enough to worry about, what with Gregg and the girls, and Fulsom, and the *Grimoire* business, now Sweyn, out of all expectation, had picked this wildly inopportune time to lose his grip and get drunk.

He tried to keep his mind cool and ready for crisis. Old Firamthoth was right—it was an idyllic scene. The men of the *Mole*, together with some of their hosts, were seated along the outer side of a crescent-shaped table now heaped with a last course of exotic fruits and nuts in pouched and bearded shells, and set with fabulously shaped wineglasses of dark wood and transparent shell and horn. Before the feasters, along the inner side of the crescent, fires in shielded braziers cast a pulsing

light on the cleared space for dancing and athletic display. Beyond that space, another row of fires gleamed. All around—beyond the fires and behind and to either side of the banquet table—loomed the steep-roofed, fantastically thatched huts of the village, their kingposts and eaves showing a bold yet intricate carving reminiscent of Earth's Maoris. Beyond that rose the translucent, frondy horizon of the black jungle. While overhead stretched the diamond-veined magnificence of the meteor-fretted sky.

Firamthoth, a cloak of green and golden plumes dropping from his shoulders, sat midway along the table. Karl, at Firamthoth's left, glanced beyond him at the half-roofed litter in which Master Fulsom still rested. Firamthoth caught the look and his bony fingers lightly touched the back of Karl's hand.

"Do not worry," he said softly, yet with conviction. "Your chief is safe." His smile did not eradicate his cheek's skull-like hollows, black in the fire-shadows. He coughed gently.

Karl nodded obediently, wishing he were as satisfied of that—he knew Galvez wasn't. As soon as they had arrived at the village Firamthoth had insisted on giving Fulsom over to the ministrations of a gleaming-eyed woman as old as sin and as skinny as asceticism. Galvez had objected and tried to confer with Fulsom, but the master weakened and somewhat delirious from the journey through the jungle, had peevishly refused to talk. The *Mole's* doctor

had retired with tight-lipped dignity to his place down the table. The old witch was still sitting beside the litter, Karl noted. She seemed to be holding hands with Fulsom, and talking to him softly. He couldn't see Fulsom, though—the thatched half-roof of the litter hid him.

A hiccupy grunt at his left elbow recalled Karl's attention. Sweyn had emptied his drinking shell—a ridgy and spiraled one crusted with gold filagree—and was holding it out to one of the serving boys to be refilled. The fact that Sweyn, alone of all the men of the *Mole*, still wore a space cap, only made his crudity more annoying. Karl thought of remonstrating with him, but a glance at the belligerent tilt of the Viking's jaw told him that would only make matters worse. Groaning inwardly, he tried to concentrate on the dancers.

That wasn't difficult at all. The whirling girls, their fiery opalescent skirts standing out around them, seemed one moment like woodland sprites, the next like giant flowers in a whirlwind—their shirts the petals, their slim bodies the pink stamens—the next simply beautiful women waist-deep in flame. Their swimmingly rhythmic movements lured the mind down dreamy paths of reverie and desire. He noticed that Gey was among them. But what struck Karl Friedrich most forcibly was the sureness and ease of their movements, quite matching their physical perfection and as incredible as the physical feats of the male

leapers and sword dancers who had preceded them. Karl tried to tell himself it was just the "South Seas" atmosphere—so weird in the Coal-sack—and the willingness to overlook imperfections of an imagination fretted as much as Gregg's by the dreariness and celibacy of deep space. But in his heart he knew that just wasn't so. There really was some secret of perfection here that all the rest of the Galaxy, with its taut and bustling spaceports, its planets crowded with people struggling to keep up the pace set by machines—the old FTL grind!—had lost—or never possessed.

The dance ended in a dying flutter of skirts and a clash of cymbals. At the end of the crescent table to Karl's left—beyond Sweyn, Galvez, Andrews, and Ubii—Gregg and Carlo Baldini stood up and loudly clapped their approval. The girls ran to them and stood clustered around that end of the table, laughing and panting, sipping from the wine horns eagerly offered them and only half-avoiding the hugs and kisses that seemed to be Gregg's and Carlo's notion of really proper applause.

And *that* wouldn't do, Karl told himself. He might have to watch Sweyn get drunk without lifting a finger and listen to some witch drone the Old Man to death, but he could not let those two get out of hand. He knew that though barbaric hospitality may seem utterly free and unbounded, it generally has some pretty sharp—even knife-edged and

knife-enforced—limits. He stood up, slipping a bit in an oddly muddy patch of ground between his chair and Sweyn's, caught himself, and started to move off behind Sweyn's chair—when once again he felt Firamthoth's bony and preternaturally nerveless hand on his.

"Sit down," the old savage told him, gently but with an authority Karl could not bring himself to challenge. "Now we look at smoke pictures."

Young men were heaping something on the fires beyond the dancing space. They ceased to flame and began to pour out thick plumes which swiftly joined to form a wall shutting out the huts beyond. On that upward-flowing gray waterfall the nearer braziers cast a flickering light.

Firamthoth rose slowly—all his movements had been slow and careful tonight, more so even than in the clearing—and addressed the men of the *Mole*, who were all—save Fulsom—sitting to his left.

"We will now show you smoke pictures. They are one of our simple pleasures—maybe too simple for you forceful men who wield great flames and build gigantic towers overnight and dare to dwell with demons. Yet perhaps you will humor us by watching them, and even find some mild delight therein. Silanti will make the smoke pictures for you."

And he gestured toward a slim, feathered-caped, indolent-faced man—youthful-seeming though with grizzled hair—who had moved into the

dancing space. Karl studied his huge, misty silhouette on the smoke curtain, watched it grow bat-winged as Silanti lifted his arm in greeting, and decided that such "smoke pictures" would be rather childish entertainment indeed—when Silanti stepped inside the row of braziers. He stood before Firamthoth's place, looking along the crescent at the crew of the *Mole*. Silanti's eyes, Karl decided, were the laziest and gentlest he'd ever seen.

"Our smoke pictures are simple things, indeed," Silanti said in a voice matching his eyes, "yet they are not always easy to see. It is a more fragile pleasure than dancing—watch it delicately. Lean back. Sip your wine or suck gently at the fruits, softly crushing their tender juice-sacks between palate and tongue. And watch the smoke."

Karl obeyed some of these directions, including the last. He wondered whether other shadow dancers would appear, perhaps behind the smoke, or if the smoke itself would change color from the materials heaped on it. But his mind wandered and he found himself thinking of Alpha Centauri Duo, the planet of his birth. He felt suddenly very lonely, depressingly conscious of the terrible distances of the Galaxy, and a spasm of homesickness went through him.

He was recalled from his reverie when his drinking cup, which he had barely sipped after the first refill, slid away toward the left. He turned and saw that Sweyn was gripping it

tight as a child grips a stolen toy, and scowling belligerently at the smoke. Then, seeming to sense Karl's interest, Sweyn scowled at him instead and slapped the blaster at his hip. Karl Friedrich shrugged and once more tried to see the "pictures." But that was a tedious business and again his mind wandered, this time to thoughts of the planet Rigel Tres. He imagined himself coming in on a copter through the heady, high-argon air that made all voices strangely deep past the green volcanic peaks of the Dead Jet Mountains, toward the metropolis of New Orion, its roofs smoky white under the bright, pale sun.

Then Karl Friedrich came to with a shiver hovering over the length of his spine. It had occurred to him that he had never been to Rigel Tres. He'd read about the place, of course, and seen films, but how could that tell him exactly how its high-argon air would hit his lungs, and the exact shade of New Orion's roofs, seen not through a camera's eye but through a Rigelian helmet's dark plastic? He shot a quick glance at Silanti. As if by prearrangement, the latter was looking at him. He fancied that the slim, grizzled man's lips were curled in a ghostly, playful smile. He looked quickly down the table to see if his crewmates had felt anything strange—and found a new worry.

Carlo had settled down again and was sipping wine and talking quietly, though with expansive grins and

grimaces, to three of the dancing girls. Probably telling them outrageous lies about himself.

But Gregg and Gey weren't to be seen.

This time Firamthoth stopped Karl before he could rise from his seat. The old chief's voice was almost stern.

"Watch the smoke pictures."

Karl obeyed, though with an inward reluctance—there was something a little frightening now about that gray, wavy blanket—and gradually his worries about Gregg and the girl were lost in a more spectral apprehension.

Once more his thoughts were shooting off to places light-decades distant, only now those thoughts—far sharper than his ordinary run of mental images—seemed more and more to project themselves on the smoke; and more and more they were scenes that he was doubtful if he had ever witnessed even on film. Jungles lit by triple moons. Spaceship bridges bright with the mixed, particolored daylight of double suns of different hue. Pluto's cold waste aglitter under star-small Sol. Whirling stampede of the wheel-beasts across the colorless steppes of Lyra Quinque, Kangaroo-hop of the coleopteroids out of their way, and the neat tire-tracks behind the wheel-beasts. A ceaselessly writhing forest where plants crept frightenedly past sessile, tentacled animals. Nameless white mountains.

Finally these fleeting images gave way to a more lasting vision. It



seemed to Karl that the smoke curtain—or the mental image projected on it—grew blacker than any ordinary night, blacker than blindness. Gradually he made out a few tiny white clouds, faint as swarms of phosphor-flies in a Douian marsh, and realized that he was envisioning a place set in double-deep space between the galaxies.

For a while that was all there was to the "picture," except that he noted that the galaxies lay in a single band, as if he were viewing them from the bottom of a deep canyon—and with better than human vision. Then, with a vision that was more than vision, a kind of direct perception, he began to make out creatures hanging along the walls of the chasm—great spidery things covered with a thick black fur out of which stalked organs occasionally pushed

for quick furtive glimpsings, or other sensings. And watching them, Karl became aware of a hunger and a desire that were nauseating in their cruelty and yet possessed a spidery fascination.

"Stop! Stop now!"

It was Firamthoth who cried out, shattering the hideous hallucination, so that Karl again saw only smoke. He quickly looked toward his left. With the exception of Sweyn, who was slumped over so that his chin almost touched the table and whose eyes still squinted stupidly at the smoke, the crewmen were all glancing at each other, pale and shaken.

Firamthoth turned away angrily from a humbly-bowing Silanti. "I ask your pardon," he said to the men of the *Mole* in a voice that suddenly grew uneven and gasping, though without losing dignity.

"Sometimes we make bad pictures. That is"—he shot a fierce glance at Silanti—"sometimes the stupid and foolhardy among us make bad pictures. To cure this unpleasantness, I myself will show you happy pictures. The oldest wine will be poured for you—and you shall see. Fetch b'loon tree wine, boys!"

Karl was no longer listening to him. Sweyn had gripped Karl's elbow and, lips close to Karl's ear, was whispering in a strangely cold, very sober voice—except that Karl had heard very drunken men use just such tones—"Now do you see? There's your final proof that these folk are either allies or dupes of some completely hostile extragalactic power that knows how to use thought as we use quantum mechanics. Wait a little longer and we'll be their dupes, too. Before the whole galaxy is infected—and with the *Mole* that could happen in weeks—we must exterminate all life on this planet. Right now. It can be done. It must be done. Once and for all, are you with me?"

Karl shivered, but before he could formulate a reply, old Firamthoth's voice cut through his muddled thoughts—not loudly, yet raspingly, like a saw-edged knife.

"I sense evil here! Merciless evil against us all, waiting for opportunity to strike. Men of the Silver Tower, until this evil is discovered, you are our prisoners!"

All faces turned toward him. The crewmen were strange and pale in the smoke-reflected brazier-light.

And shaken. All but Sweyn. He stood up tall and steady as a docked spaceship and faced Firamthoth, as if about to make some iron-firm rebuttal. Karl felt a thrill of pride at the mate's act.

But then the first mate wavered. His head rocked and his eyes began to roll in their sockets, and he squinted fantastically, as if that would stop them.

"You're drunk!" Karl heard himself saying in a burst of irrepressible disgust.

Sweyn nodded—or at least his chin slumped against his chest—and he pitched down sprawl over his chair.

Old Firamthoth's nostrils flared contemptuously. "Take him to the first guest house. There let him have his booze-sleep."

Four young men came behind the chairs.

"Wait," Karl said, "you may not do this," but even as he spoke, he felt Firamthoth's fiery gaze upon him, and his strength seemed turned to smoke.

The young men filed on impassively. Karl could not tear his own gaze away from Firamthoth, but he put out his arm to bar their way—and found he could not lift his hand above his elbow.

"Our prisoners," Firamthoth repeated to him with a meaningful glare. Karl felt his knees growing weak. He heard Galvez call from behind him, "I must attend to our mate medically. And I must see our captain." Firamthoth's gaze knifed past Karl and he said hissing, "You

will see no one. Nor stir from your place," and there was no more from Galvez. Then Carlo cried out something, but his voice was suddenly choked off, and Karl could hear the dancing girls laugh cruelly. Karl's knees buckled and he slumped down in Sweyn's chair.

As soon as that happened he found himself able to control his movements, though only in a feeble way, as if he were coming out of a fever. He turned with difficulty and watched Sweyn carried into a dark hut nearby. A few moments later the four young men filed out again. The hangings of the doorway fell to behind them.

"Listen to his mind, Tongew," Firamthoth called. "Make sure he sleeps on."

One of the young men dropped behind. He did not re-enter the hut, but squatted in front of the door, dreamy-eyed.

Firamthoth moved down the table, beyond Fulsom's litter, to confer with the men there. Karl became aware of a faint melodious voice sleepily droning, and saw that the old witch was still "ministering" to Fulsom. He had the impression she had not once looked up during the excitement.

The smoke curtain thinned, died. The fires across the dancing space flamed up, though not as brightly as at first. Karl was conscious of many primitive, impassive faces peering from the shadows. He looked around at his comrades and felt no great urge to communicate with them—

and doubtful of his ability to do so if he tried. Whatever hypnotic power Firamthoth had subjected all of them to, seemed to be devilishly slow in wearing off. Karl's limbs were almost powerless and it was hard for him to move his thoughts. He was aware of little things, like the muddiness under his chair. With difficulty he recalled the shadow pictures, retching a little at the last one, and tried to reason through the logic of the mate's response to them. The witch droned on. Time crept along.

Finally Firamthoth came back. The old chief seemed to have grown very weak—there was a man steady-ing him at either side and he moved as if conscious of an inward fragility—yet strangely enough his presence seemed to have a tonic effect. Karl could feel his own muscles grow stronger, his head clearer, and sensed that his comrades were undergoing a similar reaction.

Firamthoth sat down facing them in front of the table on a chair fetched for him. He smiled at them, wearily, but no longer grimly.

"Well, gentlemen," he said quietly, "we can take off our foolish masks now. The play is over. We need no longer refer to spaceships as silver towers. And instead of demons inhabiting dead matter, we can say—machines."

His face grew a little stern and somber at the last word. "For be sure of one thing—it was not altogether a play. Our lives are much as you have seen them. And we hate

machines. Our taboo against them is our life's core."

He coned their faces, then slowly shook his head. "You are not exactly like what I expected men from outside to be. For although we glimpse much of the outside, understanding and feeling is another matter. You are more complex and your minds are torn in many directions, but chiefly between the demands of the machines and of the rest of life—as were the minds of our own foreparents.

"Centuries ago our foreparents realized that man was moving too swiftly. His inventions were driving him on a frantic quest across the Galaxy. There was no time for his feelings and desires and understandings to catch up with the machines he had created. For inventions and power and knowledge increased at a geometrical ratio, and later even at a third and fourth power ratio. But there is no geometrical ratio of increase for the spirit—except for the spiritless brains of electricity and metal. More and more often, when the spirit made its demands, the answer was given, 'We have no time'—what you now call the old FTL grind. Individual men tried to slow their private worlds and give the spirit breathing-space by self-discipline or by drugs and drink, but with little success." He nodded toward Sweyn's hut. "Joy shrank. Wonder died. Spirit stopped growing.

"Our foreparents were men and women still interested in things of

the spirit. Though by then such an interest had become a painful thing. They realized that if even a little spirit were to be saved for growth, they must retire from mankind. Half measures were no good. They must forswear the machine forever and instill into their children a rigid detestation of it, else the glitter of the machine and the easy marvels it brought would some day surely draw them back.

"Ancient peoples on old Earth had tried the same experiment of retiring into the world of the spirit. But they had tried it too early. They had been ignorant, riddled by superstitious delusions. Our foreparents knew more. Men had begun to study the true workings of the spirit; they had explored the fringes of the unconscious realms and learned somewhat of how mind speaks with mind, of how mind-pictures are made to seem real, the art of seeing with the inward eye and listening with the third ear—though such studies had more and more difficulty in competing with the demands of the machine.

"To accomplish their purpose, our foreparents made one last use of a machine. They stole the spaceship *Logic*, renaming it the *Grimoire*. Knowing the Confederacy would track them to any planet in clean space, they took the risk of plunging into the Coalsack. And there they finally found a planet suitable for easy life. Landing the *Grimoire*, they placed it and all their other machines under an eternal

taboo, and walked into the jungle."

Although Karl Friedrich hung on Firamthoth's words, he was aware of a returning uneasiness. He looked toward Fulsom's litter, where the witch droned on, and toward Sweyn's dark hut where the "listener" still crouched. Gregg was nowhere to be seen. And for some reason the muddy patch under his chair fretted Karl's mind.

"For the first years our fore-parents fared poorly," the old hypnotist continued, "but gradually they built the sort of life they desired. They could not make it a life wholly of the spirit, for swords and spears and even the human body are machines, though the evil in them is small and they do little to pervert the mind.

"Slowly there grew a land of jungle villages in which life moved at a pleasant tempo, with due regard for beauty. The young learned the skills of play and the dance, of the hunt and love, of poetry and song, and were widely instructed in history and the arts. In short, the young were simple—though occasionally there would come one of precocious ability in the skills of the mind. Reaching maturity the young would choose whether to continue chiefly with such occupations, becoming leaders and students of men, or to become doctors of the body-mind that is the whole man, or to pursue those mental studies in which we have gained some skill."

Again he looked quizzically at his hearers. "And then you came, as I

suppose we should have known men from the outside finally would. We sensed your coming with our minds and tried to drive you back with phantoms, and when you still came, we pretended to be simple savages of no account, hoping you would take back such report of us to the Confederacy. But in the end our deceptions failed."

Karl's uneasiness had increased. On an impulse he dropped his hand until it touched the mud under his chair, then lifted it up.

It was his sense of smell that informed him. The mud was not earth and water, but earth and the tangy wine they'd been drinking. The deduction was obvious. Sweyn must have been dumping his drinks there.

Yet how could Sweyn have feigned drunkenness if it were true that these folk could listen to minds? Firamthoth's voice interrupted Karl's thoughts.

"So now what am I to do, Machine Men?" The old chief's skull-like face was grave, though with a ghostly humor playing about the lips. "I sense that some of you are almost friendly toward us, that you even have some admiration of our ideals. Yet I also know that there is fear in your minds, and that at least one of you hates us— or the things we stand for, or he thinks we stand for—so much that he would not scruple to destroy this planet and every life upon it. I cannot be sure which one of you, or whether more than one of you, holds that

hate in his mind, or might hold it at some time. I will not conceal from you that our mind-reading is no simple matter, and all thought-skills are uncertain. We sometimes do marvels with the mind, bridging galactic gulfs in an instant. But sometimes it fails utterly, or reports falsely.

"So, I say, what am I to do? Free you—and with you the one who would destroy us all? Let you return to the Confederacy to report, or be persuaded to report, that we constitute a danger? Hold you, and have the fleets of the Confederacy come to seek you out? It is a tangled problem."

Karl cleared his throat. Only after he had started to speak did he realize the risk he was taking. "There is the fear among us," he began, "that you may be the allies or unconscious tools of alien, human-hating creatures more skilled in thought than you yourselves. Remember the bad picture Silanti showed us?"

Firamthoth frowned. "It was a bad picture," he agreed, "and I cannot deny that there may be danger there. The universe holds many horrors. Yet consider this: Who first planted the fear of us in the Confederacy's mind? Why were you sent against us as if against a powerful enemy? Too, would not a people lacking the higher thought-skills such as the Confederacy, be more in danger from thought-powerful aliens than a people with some thought-skills? Your fear cuts two ways."

Karl's answer was forestalled by the drumming of feet on hard-packed earth. He saw two figures racing toward them through the shadows. For a moment his heart grew sick as he thought that the girl was running away from Gregg. Then he realized that she had only outsped him a little. They arrived at the table almost in a dead heat.

"Giant silver whirlbug!" Gey cried excitedly. "Demon-thing. Up from the jungle."

"Copter!" Gregg panted in amplification. "Don't know who."

Firamthoth looked at Karl Friedrich. "Someone has broken the truce," he said.

"Tell your story more clearly," Karl snapped at Gregg, taking command.

Gregg ran his hand through his rumpled hair. "Well, we'd wandered out in the jungle a ways."

"How far?" Karl asked coldly.

"About a mile," Gey answered, giving him a smile.

Karl continued to look at Gregg. He felt a bit like knocking him down. "Yes?"

"Well," Gregg continued, "as we were talking there, we heard a noise and looked up over our shoulders, and we made out one of the *Mole's* copters rising from the jungle and slanting off—fast."

"Toward the *Mole*?"

"Opposite direction, I judged."

Gey put her hand approvingly on Gregg's arm. "It is exactly as he says," she affirmed. Gregg broke into a fatuous smile.

Firamthoth turned to Karl. "Who of you—?" he began, but at that moment everyone looked toward the end of the table. Carlo had called out excitedly and darted back into the shadows between the huts. Before there was time to do anything, he was coming back with someone small cradled in his arms.

"There, you'll be all right, Miki," he murmured as the others crowded near. Then he looked up. "Thought I heard him whimpering back there, and sure enough he was, trying to crawl to us. Look at the crack he got. But it's all right, Miki."

There was a lump as big as an egg on the child's temple. He had been sick. "What happened, Miki?" Firamthoth asked. "Your thoughts swim."

The child swallowed. "Behind the huts," he said in a faint voice. "I saw the big drunken man crawling away. He saw me, too, and knocked me to sleep."

Karl's eyes turned toward the guest hut almost as quickly as Firamthoth's and he was behind the old chief as the latter strode through the hangings, while the listener blinked at them in surprise.

The hut was empty. A ragged hole gaped in the back wall. The single couch was bare, except for a tiny black box lying at the head. Karl picked it up and followed Firamthoth back out.

"What sort of guard are you, Tongew?" Firamthoth was berating the listener. "Your prisoner

was gone almost before you squatted!"

"But I tell you," Tongew objected, "I heard his thoughts all the time, and they were sleep-thoughts." Then a look of fear came into his eyes. "I still hear them." He looked at Karl. "Closer than ever."

Karl looked down at the black box in his hand. "I know," he said in a strange voice, feeling as if he were speaking under compulsion. "Sweyn must have made an electronic device to broadcast the normal rhythm of the human brain. First, when he pretended to be drunk, he adjusted it to broadcast the rhythms of sleep. When he escaped, he merely left it behind him."

"A machine!" Firamthoth shrank away as if a poisonous snake had suddenly reared up beside him. "Cast it in the fire," he ordered Karl. He sounded shaken, almost confused. "And you, Tongew!—to mistake a machine's mind for a man's!"

Karl stared at the black box. He made no move.

There was an excited flurry of voices. Those at the table were pointing at the sky above the jungle. There, very low on the horizon, barely visible through the transparent treetops, a new and reddish meteor was rising in the heavens. It moved more slowly than the other paler ones. But even as they watched, it began to gather speed.

"I know," Karl said again in the same voice. "It's Sweyn. He'd hidden one of the *Mole's* copters near

here. But it's not the *Mole* he's taking up. It's the *Grimoire*." He looked at Firamthoth, who stood very still. "Because the *Grimoire* is loaded with war dust."

Almost, it seemed to him as he thought that thought, the whole black jungle cringed.

"It will hardly be a matter of seconds," he added quietly. "Have you colonies on the other side of the planet, Firamthoth? Even that won't save you."

"Silanti!" Firamthoth's voice was suddenly fast as a young man's. "Send thought pictures against it. Bad pictures!" Then Karl felt the old chief's fingers close like talons on his arms and heard him plead, "Think of Sweyn! Think me to his mind. I cannot reach it alone. I do not know it well enough. Think of where he is. Think me there."

In the darkness of the hut's doorway, with Firamthoth's gaze pressing into him and the red meteor rising faster and faster above the treetops, Karl made his decision, trying not to value himself, trying not to be deluded by a liking for a strangely beautiful yet tiny and aberrant culture, trying to think of the Confederacy, and trying to weigh Sweyn's fears fairly, for the big and honest fears he knew them to be.

As soon as, in a matter of instants, his decision had been made, he felt a great wind come out of Firamthoth's eyes and lift him like a feather and blow him up, up, up.

There was a moment of utter blackness.

Then, without transition, he was sitting, foam-cushioned, on the bridge of a spaceship. And Rykov was sitting in the pilot's seat to his right, eyes fixed on the three-dimensional radar-map set like an open box above his lap. And beyond Rykov, sallow-faced Takamori was sitting in the astrogator's place. And his own strangely large hands were poised above the war-panel, above the tiny, neat controls of the guns and the torpedoes, and dusts—but mostly the dusts, for that was the *Grimoire's* kind of warship. In front and above the three of them, through the invisible dome, the sky was veined with rivulets of white fire, and he was conscious of a rasping grief at his heart, an ache that time would never heal for comrades who must die at his hand. But he was also conscious of a fear and a responsibility greater than grief.

"Straighten her out, Petya," he said to Rykov. "We want to be sure of getting the village at the first sweep. Then we'll take a wider orbit for the rest of the job."

Rykov didn't turn his head, but even as he obeyed the order, he said, "It has to be done?"

"Has to," Karl answered.

Then Takimori spoke in his swift, robot-stenographer voice. "And you are certain that Fulsom, Friedrich and the rest—?"

"Are safe in the *Mole*," Karl finished, knowing that he had to lie. "They'll wait until we're well started on the first sweep. Then they'll blast

... a quarter sun-distance and wait for us."

Suddenly, outside the dome and perhaps a mile ahead, something appeared—a dragon-jawed monster whose teeth jettied flame and whose many-branched tentacles caressed the dome's plastic. Karl glanced at Rykov and Takimori. Either they were too intent on the map, or else they could not see the gigantic apparition. He disregarded it. Then, leaning a little to the right, he watched the tiny cigar of the *Grimoire* move above the crystal-clear map of the jungle. "In orbit," Rykov murmured. Karl Friedrich's fingers moved toward the dust buttons.

Only they didn't reach them.

Something—something that was not a part of himself—was stopping him.

He shoved, as if against a wall.

His fingers stayed an inch or two from the dust buttons.

He realized that Rykov and Takimori were watching him.

He thought of black spidery beings in a canyon on an intergalactic planet, and almost went mad with fear that wasn't for himself.

He felt his breath coming in gasps, the sweat dribbling down his forehead with the effort he was making.

He still couldn't touch the buttons.

He began to flounder about wildly, like a trapped animal.

Then suddenly he stopped and looked sideways to his right. Rykov and Takimori were still watching



him. In their eyes he read a growing—a full-grown—conviction.

"Watch him," he heard Takimori whisper. "I'll take her down."

Rykov nodded. His hand snatched out and flicked off the panel-master in front of Karl. Rykov's eyes were cold and suspicious.

"To think—" said Rykov, and then apparently decided to leave it at that.

And Karl sat thinking of black monsters gripping his wrists from a hundred parsecs away, and tried still to plot how to break that grip.

But just then something happened to Karl's mind.

The bottom dropped out of it.

He still sat on the *Grimoire's* bridge, yet at the same time he was dropping down, down into a pit blacker and more velvet-furred and more horrible than any monster, so horrible that the speed with which he snatched the hand-blaster from the holster at his belt seemed slower than a crucifixion.

"Stop him!" he heard Takimori's cry, swifter even than Rykov's lightning movement toward him.

His rising elbow beat Rykov's lightning movement, sending Rykov sprawling half out of his seat against Takimori.

In that tiny time, the horror of the black velvet-furred pit grew immeasurably greater.

It wasn't at Rykov's brain that Karl sent the blast. Or at Takimori's.

21
22 Karl realized that he was standing in front of the guest hut, between

Firamthoth and the still-bewildered listener, and that he was holding his empty hand to his temple, and that with the forefinger of that hand he was repeatedly pulling a trigger that wasn't there.

Low on the horizon, a red and fitful meteor was sinking.

Then he remembered everything that he had felt on the *Grimoire*. His flesh grew weak. A kinder blackness closed in, caressed his mind, soothed it without quite bringing unconsciousness.

When it receded, Tongew was supporting him toward the banquet table. The red meteor was no longer in the sky, though a low red glow in its direction showed where landing blasts were mushrooming up. The primitive faces at the crescent table looked steady and serene, as if already sure in their knowledge of danger averted. Something of their spirit seemed to have leaked over into the faces of the men of the *Mole*, although the latter still were strained and shaken.

Walking at Karl's side, with dignity but a terrible care, went Firamthoth.

"Your mind found his," Firamthoth was saying, "and for those moments you were Sweyn. That blazed the trail for my mind and I was able to find you both."

Karl wet his lips. "What did you do to Sweyn," he asked, "so that he killed himself?"

Firamthoth's voice was very soft. "I was sorry to do it, and sorry that you should have to experience it.

But I was uncertain of my ability to keep his mind under control. He was a brave and clever man, though wrong in his opinions, and too great a danger to our planet to let live." Firamthoth paused, and when he spoke again his voice was curiously gentle and impersonal. "I merely showed him a part of his own mind of which he was unaware—what you call the unconscious—and the horror of that region was so great that Sweyn had no choice but to blot it out. If he could have endured that horror he could have lived, but even an adept in such things finds knowledge of his whole mind rather hard to bear."

There was a stir at the banquet table. Faces were turned away from Firamthoth and Karl Friedrich, and way made for a newcomer—a man even the men of the *Mole* found hard to recognize, because his eyes were so clear and his complexion so fresh. Nor was there a trace of puffiness about Master James Fulsom as he walked unaided and with firm step to rejoin his men—though there was a wonder in the clear eyes. The old witch stayed by the litter smiling cryptically.

Old Firamthoth looked at Fulsom. Again his voice was strangely distant and tender, as he said, "He, too, has seen a part of his mind which he had forgotten. The beauty-crushing tensions of the Galaxy that swims in clean space had become too much for him. The old FTL grind had begun to kill his body. But Selya opened his consciousness a little and showed

him that hope and wonder and romance and all his youthful dreams, were still there."

There was an exclamation of amazement. Heads turned toward Galvez. The lean features of the *Mole's* doctor were illumined with wonder. "It is what they would have called a miracle in the old days. It is something that neither I nor any other doctor under the Confederacy could do." He suddenly turned toward Firamthoth and his voice rang unrehearsed warmth.

"Sir," he said, "you've cured our chief with your greater knowledge of things of the mind and heart. Now turn about, and let us show our gratitude. I know the fever that's killing you, and it isn't from the mind, but simply from the attack of tiny, material creatures with which I know how to deal."

Old Firamthoth let himself down into a chair, with the weariness and collapse-held-barely-in-check of one who has taken his last walk in the world, almost as if the chair were his coffin. He looked at Galvez for a space and smiled gently, finally shook his head. "No," he said in a voice that was low, but that no one needed to strain to hear. "I thank you for the offer, and more for the spirit that prompts it. I know you could cure me, but your cure would take machines and the products of machines, and there I will make no compromise."

His voice grew lower yet and his gaze still more distant. "When one of our young men is to become an

adept in things of the spirit, he must go out alone into the dark jungle—the jungle darkness of his own mind—and abide there undaunted for three days. So now I must go into a greater darkness from which there is no return. It will not be long before I make that journey. In the past few hours and minutes, I have spent the strength that would have let me cling to life for many weeks.”

His expression darkened. “Perhaps I, too, must take that journey because I sent Sweyn on his.” He looked around fiercely. “He was a good man, better than most of you and many of us. Perhaps we were both too strong and sure to be permitted to exist.”

His lips crinkled faintly. “I would very much like to live. I would like to see the issues of this meeting—for be sure there will be many—and give my small aid as guide. I would like to see whether the mechanical lion can lie down with the mystic lamb. But other minds must attend to that. I have made my choice.”

The sky was so clean and bright a blue that the meteor trails barely showed. A clean wind dipped from the jungle’s bending glass-fronds and swept across the clearing around the *Mole*. And a sun, that seemed hardly dimmed at all by the dust, beat brightly down. On the ground by the landing stage stood the crew of the *Mole*, and over against them stood a somewhat larger group of villager folk. The former were in

dress uniforms, every last magnetic zipper burnished and trim as if for an admiral’s inspection. The latter were as ceremoniously and neatly dressed, all in black—coarse-woven black textiles, sable furs, and ebony bracelets and beads, and their head-dresses were black plumes bowing to the wind.

Old Firamthoth was not among them, any more than Tauno Sweyn was among the men of the *Mole*.

Captain James Fulsom finished the formal part of his speech of leave-taking and, as the tension relaxed, said in more conversational tones to Silanti, now spokesman for the villagers, “And so we return, taking a message of your friendship and harmlessness to the Confederacy.”

Silanti smiled. “We are grateful to you for that, yet I still have wonderings. You believe in us, but will the Confederacy see things in the same light?”

“We’ll make ’em,” Fulsom assured him gruffly.

Silanti nodded. “But as Firamthoth pointed out, there may be others behind the Confederacy—subtle, thought-powerful aliens—nagging the Confederacy into an interest in us and a hatred. Always remember that.”

“You can count on us,” Fulsom told him. “Incidentally, are you still set on not having any of your people come back with us? They might be a great help, you know, in persuading the Confederacy. And I think”—his eyes went to Gey and

Gregg, talking together earnestly, and to Carlo surrounded by half a dozen children—"that there are a few of them who would be only too happy to come, if you'll excuse my saying so."

"You speak the sheerest truth," Silanti agreed amiably. "Yet it may not be. We offer the Confederacy our warmest friendship, yet our taboos still stand. If we are to mingle with you, if we are to visit you, it must be at our own time and in our own way, not by your machines."

"Well, if that's the way you feel," said Fulsom.

Karl Friedrich broke in. "I've been thinking a lot about this," he said. "Isn't there some compromise possible? I don't think the machine is bad in itself. The only bad thing about machines is the regimentation and too-fast pace it's made possible. No more can mind be bad, except when it begins to spider-spin self-deceiving delusion and superstitions. Isn't there a way in which the best of the machine can be mated with the best of the mind?"

"There may be," Silanti said gravely. "Firamthoth spoke of the mechanical lion lying down with the mystic lamb. But that is in the future. We must first know each other better."

Karl nodded. Fulsom said, "Well, I guess that's that."

"Always remember," said Silanti, "that we are on your side. We will

keep watch for you on those possible enemies against which your subtlest machines provide you with no defense—always remembering that even those enemies may become friends, that there are no ultimate barriers to love and the spirit."

Karl, remembering a vision of black, spidery monsters chasm-crouched in the intergalactic dark, felt a bit doubtful.

There was a general stir of movement. Gey threw her arms around Gregg and their lips met in a long kiss. Takimori commented to Galvez, only one tenth joking, "Ain't love wonderful?"

It had been the bearest murmur, but Gey, stepping back from Gregg, smiled at Takimori and said, "Yes, isn't it?"

Carlo hoisted Miki in his arms. Miki did not smile, but said, "When you come back, I will teach you the trick of making time turn around and an ice cream soda become ice cream and milk and syrup again."

Carlo grimaced comically. "I'm not sure I'd like to know, Miki," he said. "But if you want me to, I'll try."

Silanti smiled at Fulsom and Karl Friedrich. He said, "Our thoughts go with you."

Then the villagers walked back toward the jungle and the other men climbed into the *Mole* and the landing stage was drawn in and the port closed behind them.

THE END

THE SACK

BY WILLIAM MORRISON

The Sack was the System's most valuable possession—or else the most serious menace. It could correctly answer any question, and the answers were frequently the wrong ones. And anything like that was an impossibly explosive situation!

Illustrated by Cartier

At first they hadn't even known that the Sack existed. If they had noticed it at all when they landed on the asteroid, they thought of it merely as one more outpost of rock on the barren expanse of roughly ellipsoidal silicate surface, which Captain Ganko noticed had major and minor axes roughly three and two miles in diameter respectively. It would never have entered any one's mind that the unimpressive object they had unconsciously acquired would soon be regarded as the most valuable prize in the System.

The landing had been accidental. The Government Patrol ship had been limping along, and now it had settled down for repairs, which would take a good seventy hours. Fortunately, they had plenty of air, and their recirculation system

worked to perfection. Food was in somewhat short supply, but it didn't worry them, for they knew that they could always tighten their belts and do without full rations for a few days. The loss of water that had resulted from a leak in the storage tanks, however, was a more serious matter. It occupied a good part of their conversation during the next fifty hours.

Captain Ganko said finally, "There's no use talking, it won't be enough. And there are no supply stations close enough at hand to be of any use. We'll have to radio ahead and hope that they can get a rescue ship to us with a reserve supply."

The helmet mike of his next in command seemed to droop. "It'll be too bad if we miss each other in space, captain."

Captain Ganko laughed unhappily. "It certainly will. In that case we'll have a chance to see how we can stand a little dehydration."

For a time nobody said anything. At last, however, the Second Mate suggested, "There might be water somewhere on the asteroid, sir."

"Here? How in Pluto would it stick, with a gravity that isn't even strong enough to hold loose rocks? And where the devil would it be?"

"To answer the first question first, it would be retained as water of crystallization," replied a soft liquid voice that seemed to penetrate his spacesuit and come from behind him. "To answer the second question, it is half a dozen feet below the sur-

face, and can easily be reached by digging."

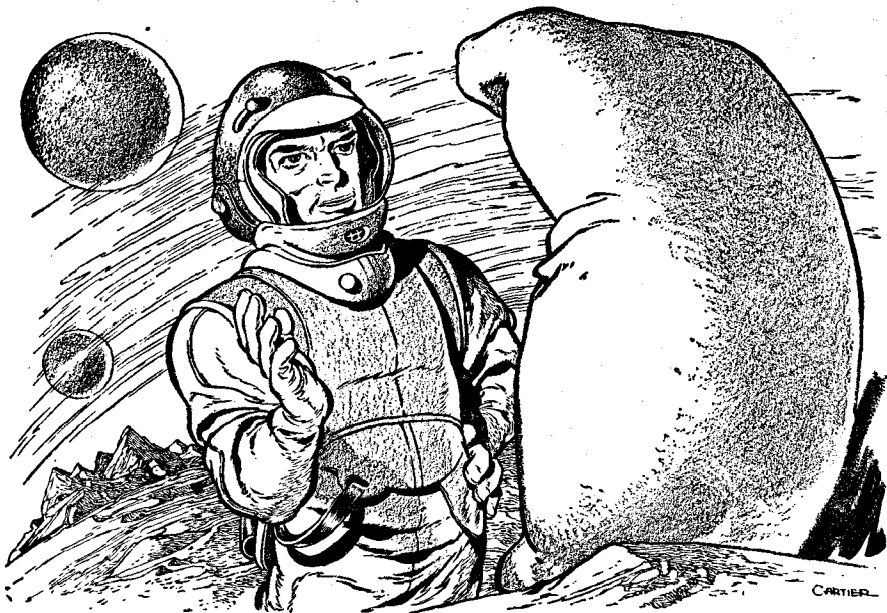
They had all swiveled around at the first words. But no one was in sight in the direction from which the words seemed to come. Captain Ganko frowned, and his eyes narrowed dangerously. "We don't happen to have a practical joker with us, do we?" he asked mildly.

"You do not," replied the voice.

"Who said that?"

"I, Yzrl."

A crewman became aware of something moving on the surface of one of the great rocks, and pointed to it. The motion stopped when the voice ceased, but they didn't lose sight of it again. That was how they learned about Yzrl, or as it was more



often called, the Mind-Sack.

If the ship and his services hadn't both belonged to the Government, Captain Ganko could have claimed the Sack for himself or his owners and retired with a wealth far beyond his dreams. As it was, the thing passed into Government control. Its importance was realized almost from the first, and Jake Siebling had reason to be proud when more important and more influential figures of the political and industrial world were finally passed over and he was made Custodian of the Sack. Siebling was a short, stocky man whose one weakness was self-deprecation. He had carried out one difficult assignment after another and allowed other men to take the credit. But this job was not one for a blowhard, and those in charge of making the appointment knew it. For once they looked beyond credit and superficial reputation, and chose an individual they disliked somewhat, but trusted absolutely. It was one of the most effective tributes to honesty and ability ever devised.

The Sack, as Siebling learned from seeing it daily, rarely deviated from the form in which it had made its first appearance—a rocky, grayish lump that roughly resembled a sack of potatoes. It had no features, and there was nothing, when it was not being asked questions, that might indicate that it had life. It ate rarely—once in a thousand years, it said, when left to itself; once a week when it was pressed into steady use.

It ate or moved by fashioning a suitable pseudopod, and stretching the thing out in whatever way it pleased. When it had attained its objective, the pseudopod was withdrawn into the main body again, and the creature became once more a potato sack.

It turned out later that the name, "Sack," was well chosen from another point of view, in addition to that of appearance. For the Sack was stuffed with information, and beyond that, with wisdom. There were many doubters at first, and some of them retained their doubts to the very end, just as some people remained convinced hundreds of years after Columbus that the Earth was flat. But those who saw and heard the Sack had no doubts at all. They tended, if anything, to go too far in the other direction, and to believe that the Sack knew everything. This, of course, was untrue.

It was the official function of the Sack, established by a series of Interplanetary Acts, to answer questions. The first questions, as we have seen, were asked accidentally, by Captain Ganko. Later they were asked purposefully, but with a purpose that was itself random, and a few politicians managed to acquire considerable wealth before the Government put a stop to the leak of information, and tried to have the questions asked in a more scientific and logical manner.

Question time was rationed for months in advance, and sold at what was, all things considered, a ridiculously low rate—a mere hundred

ousand credits a minute. It was unrestricted sale of time that led to the first great Government debacle.

It was the unexpected failure of the Sack to answer what must have been to a mind of its ability an easy question that led to the second blow which was fierce enough to be called a crisis. A total of a hundred and twenty questioners, each of whom had paid his hundred thousand, raised a howl that could be heard on every planet, and there was a legislative investigation, at which Siebling testified, and all the conflicts were aired.

He had left an assistant in charge of the Sack, and now, as he sat before the Senatorial Committee, he twisted uncomfortably in front of the battery of cameras. Senator Horrigan, his chief interrogator, was a bluff, florid, loud-mouthed politician who had been able to imbue him with a feeling of guilt even as he told his name, age, and length of government service.

"It is your duty to see to it that the Sack is maintained in proper condition for answering questions, is it not, Mr. Siebling?" demanded Senator Horrigan.

"Yes, sir."

"Then why was it incapable of answering the questioners in question? These gentlemen had honestly paid their money—a hundred thousand credits each. It was necessary, I understand, to refund the total sum. That meant an overall loss to the Government of, let me see, now—

one hundred twenty at one hundred thousand each—one hundred and twenty million credits," he shouted, rolling the words.

"Twelve million, senator," hastily whispered his secretary.

The correction was not made, and the figure was duly headlined later as one hundred and twenty million.

Siebling said, "As we discovered later, senator, the Sack failed to answer questions because it was not a machine, but a living creature. It was exhausted. It had been exposed to questioning on a twenty-four-hour-a-day basis."

"And who permitted this idiotic procedure?" boomed Senator Horrigan.

"You yourself, senator," said Siebling happily. "The procedure was provided for in the bill introduced by you and approved by your committee."

Senator Horrigan had never even read the bill to which his name was attached, and he was certainly not to blame for its provisions. But this private knowledge of his own innocence did him no good with the public. From that moment he was Siebling's bitter enemy.

"So the Sack ceased to answer questions for two whole hours?"

"Yes, sir. It resumed only after a rest."

"And it answered then without further difficulty?"

"No, sir. Its response was slowed down. Subsequent questioners complained that they were defrauded of

a good part of their money. But as answers *were* given, we considered that the complaints were without merit, and the financial department refused to make refunds."

"Do you consider that this cheating of investors in the Sack's time is honest?"

"That's none of my business, senator," returned Siebling, who had by this time got over most of his nervousness. "I merely see to the execution of the laws. I leave the question of honesty to those who make them. I presume that it's in perfectly good hands."

Senator Horrigan flushed at the laughter that came from the onlookers. He was personally unpopular, as unpopular as a politician can be and still remain a politician. He was disliked even by the members of his own party, and some of his best political friends were among the laughers. He decided to abandon what had turned out to be an unfortunate line of questioning.

"It is a matter of fact, Mr. Siebling, is it not, that you have frequently refused admittance to investors who were able to show perfectly valid receipts for their credits?"

"That is a fact, sir. But—"

"You admit it, then."

"There is no question of 'admitting' anything, senator. What I meant to say was—"

"Never mind what you meant to say. It's what you have already said that's important. You've cheated these men of their money!"

"That is not true, sir. They were

given time later. The reason for my refusal to grant them admission when they asked for it was that the time had been previously reserved for the Armed Forces. There are important research questions that come up, and there is, as you know, a difference of opinion as to priority. When confronted with requisitions for time from a commercial investor and a representative of the Government, I never took it upon myself to settle the question. I always consulted with the Government's legal adviser."

"So you refused to make an independent decision, did you?"

"My duty, senator, is to look after the welfare of the Sack. I do not concern myself with political questions. We had a moment of free time the day before I left the asteroid, when an investor who had already paid his money was delayed by a space accident, so instead of letting the moment go to waste, I utilized it to ask the Sack a question."

"How you might advance your own fortunes, no doubt?"

"No, sir. I merely asked it how it might function most efficiently. I took the precaution of making a recording, knowing that my word might be doubted. If you wish, senator, I can introduce the recording in evidence."

Senator Horrigan grunted, and waved his hand. "Go on with your answer."

"The Sack replied that it would require two hours of complete rest out of every twenty, plus an addi-

tional hour of what it called, 'recreation'. That is, it wanted to converse with some human being who would ask what it called sensible questions, and not press for a quick answer."

"So you suggest that the Government waste three hours of every twenty—one hundred and eighty million credits?"

"Eighteen million," whispered the secretary.

"The time would not be wasted. Any attempt to overwork the Sack would result in its premature annihilation."

"That is your idea, is it?"

"No, sir, that is what the Sack itself said."

At this point, Senator Horrigan swung into a speech of denunciation, and Siebling was excused from further testimony. Other witnesses were called, but at the end the Senate Investigating body was able to come to no definite conclusion, and it was decided to interrogate the Sack personally:

It was out of the question for the Sack to come to the Senate, so the Senate quite naturally came to the Sack. The Committee of Seven was manifestly uneasy as the senatorial ship decelerated and cast its grapples toward the asteroid. The members, as individuals, had all traveled in space before, but all their previous destinations had been in civilized territory, and they obviously did not relish the prospect of landing on this airless and sunless body of rock.

The televisior companies were alert

to their opportunity, and they had acquired more experience with desert territory. They had disembarked and set up their apparatus before the senators had taken their first timid steps out of the safety of their ship.

Siebling noted ironically that in these somewhat frightening surroundings, far from their home grounds, the senators were not so sure of themselves. It was his part to act the friendly guide, and he did so with relish.

"You see, gentlemen," he said respectfully, "it was decided, on the Sack's own advice, not to permit it to be further exposed to possible collision with stray meteors. It was the meteors which had killed off the other members of its strange race, and it was a lucky chance that the last surviving individual had managed to escape destruction as long as it had. An impenetrable shelter dome has been built therefore, and the Sack now lives under its protection. Questioners address it through a sound and sight system that is almost as good as being face to face with it."

Senator Horrigan fastened upon the significant part of his statement. "You mean that the Sack is safe—and *we* are exposed to danger from flying meteors?"

"Naturally, senator. The Sack is unique in the System. Men—even senators—are, if you will excuse the expression, a decicredit a dozen. They are definitely replaceable, by means of elections."

Beneath his helmet the senator turned green with a fear that concealed the scarlet of his anger. "I think it is an outrage to find the Government so unsolicitous of the safety and welfare of its employees!"

"So do I, sir. I live here the year round." He added smoothly, "Would you gentlemen care to see the Sack now?"

They stared at the huge visor screen and saw the Sack resting on its seat before them, looking like a burlap bag of potatoes which had been tossed onto a throne and forgotten there. It looked so definitely inanimate that it struck them as strange that the thing should remain upright instead of toppling over. All the same, for a moment the senators could not help showing the awe that overwhelmed them. Even Senator Horrigan was silent.

But the moment passed. He said, "Sir, we are an official Investigating Committee of the Interplanetary Senate, and we have come to ask you a few questions." The Sack showed no desire to reply, and Senator Horrigan cleared his throat and went on. "Is it true, sir, that you require two hours of complete rest in every twenty, and one hour for recreation, or, as I may put it, perhaps more precisely, relaxation?"

"It is true."

Senator Horrigan gave the creature its chance, but the Sack, unlike a senator, did not elaborate. Another of the Committee asked, "Where would you find an individual capable of conversing intelligently with so

wise a creature as you?"

"Here," replied the Sack.

"It is necessary to ask questions that are directly to the point, senator," suggested Siebling. "The Sack does not usually volunteer information that has not been specifically called for."

Senator Horrigan said quickly, "I assume, sir, that when you speak of finding an intelligence on a par with your own, you refer to a member of our committee, and I am sure that of all my colleagues, there is not one who is unworthy of being so denominated. But we cannot all of us spare the time needed for our manifold other duties, so I wish to ask you, sir, which of us, in your opinion, has the peculiar qualifications of that sort of wisdom which is required for this great task?"

"None," said the Sack.

Senator Horrigan looked blank. One of the other senators flushed, and asked, "Who has?"

"Siebling."

Senator Horrigan forgot his awe of the Sack, and shouted, "This is a put-up job!"

The other senator who had just spoken now said suddenly, "How is it that there are no other questioners present? Hasn't the Sack's time been sold far in advance?"

Siebling nodded. "I was ordered to cancel all previous appointments with the Sack, sir."

"By what idiot's orders?"

"Senator Horrigan's, sir."

At this point the investigation might have been said to come to an

end. There was just time, before they turned away, for Senator Horrigan to demand desperately of the Sack, "Sir, will I be re-elected?" But the roar of anger that went up from his colleagues prevented him from hearing the Sack's answer, and only the question was picked up, and broadcast clearly over the interplanetary network.

It had such an effect that it in itself provided Senator Horrigan's answer. He was *not* re-elected. But before the election, he had time to cast his vote against Siebling's designation to talk with the Sack for one hour out of every twenty. The final Committee vote was four to three in favor of Siebling, and the decision was confirmed by the Senate. And then Senator Horrigan passed temporarily out of the Sack's life and out of Siebling's.

Siebling looked forward with some trepidation to his first long interview with the Sack. Hitherto he had limited himself to the simple tasks provided for in his directives—to the maintenance of the meteor shelter dome, to the provision of a sparse food supply, and to the proper placement of an Army and Space Fleet Guard. For by this time the great value of the Sack had been recognized throughout the System, and it was widely realized that there would be thousands of criminals anxious to steal so defenseless a treasure.

Now, Siebling thought, he would be obliged to talk to it, and he feared that he would lose the good opinion

which it had somehow acquired of him. He was in a position strangely like that of a young girl who would have liked nothing better than to talk of her dresses and her boy friends to someone with her own background, and was forced to endure a brilliant and witty conversation with some man three times her age.

But he lost some of his awe when he faced the Sack itself. It would have been absurd to say that the strange creature's manner put him at ease. The creature had no manner. It was featureless and expressionless, and even when part of it moved, as when it was speaking, the effect was completely impersonal. Nevertheless, something about it did make him lose his fears.

For a time he stood before it and said nothing. To his surprise, the Sack spoke—the first time to his knowledge that it had done so without being asked a question. "You will not disappoint me," it said. "I expect nothing."

Siebling grinned. Not only had the Sack never before volunteered to speak, it had never spoken so dryly. For the first time it began to seem not so much a mechanical brain as the living creature he knew it to be. He asked, "Has anyone ever before asked you about your origin?"

"One man. That was before my time was rationed. And even he caught himself when he realized that he might better be asking how to become rich, and he paid little attention to my answer."

"How old are you?"

"Four hundred thousand years. I can tell you to the fraction of a second, but I suppose that you do not wish me to speak as precisely as usual."

The thing, thought Siebling, did have in its way a sense of humor. "How much of that time," he asked, "have you spent alone?"

"More than ten thousand years."

"You told someone once that your companions were killed by meteors. Couldn't you have guarded against them?"

The Sack said slowly, almost wearily, "That was after we had ceased to have an interest in remaining alive. The first death was three hundred thousand years ago."

"And you have lived, since then, without wanting to?"

"I have no great interest in dying either. Living has become a habit."

"Why did you lose your interest in remaining alive?"

"Because we lost the future. There had been a miscalculation."

"You are capable of making mistakes?"

"We had not lost that capacity. There was a miscalculation, and although those of us then living escaped personal disaster, our next generation was not so fortunate. We lost any chance of having descendants. After that, we had nothing for which to live."

Siebling nodded. It was a loss of motive that a human being could understand. He asked, "With all your knowledge, couldn't you have over-

come the effects of what happened?"

The Sack said, "The more things become possible to you, the more you will understand that they cannot be done in impossible ways. We could not do everything. Sometimes one of the more stupid of those who come here asks me a question I cannot answer, and then becomes angry because he feels that he has been cheated of his credits. Others ask me to predict the future. I can predict only what I can calculate, and I soon come to the end of my powers of calculation. They are great compared to yours; they are small compared to the possibilities of the future."

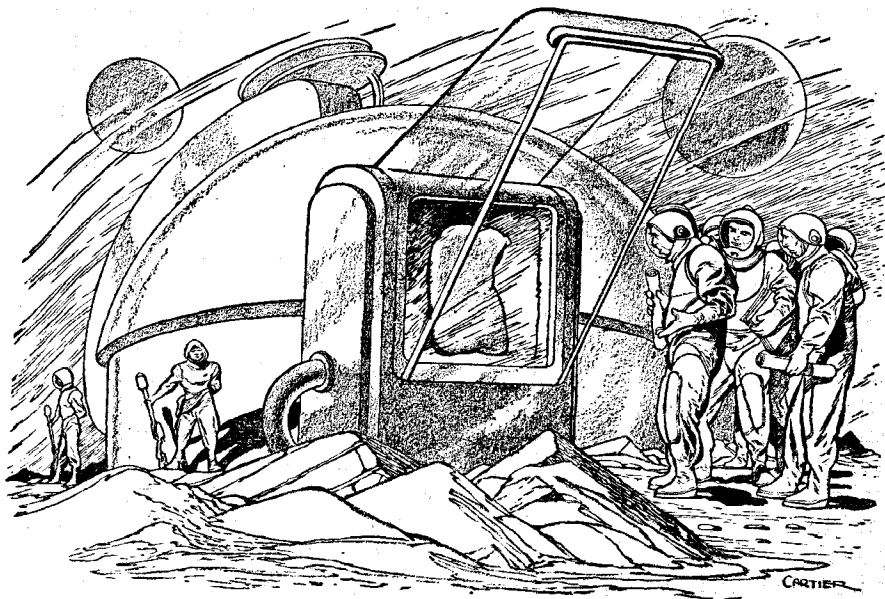
"How do you happen to know so much? Is the knowledge born in you?"

"Only the possibility for knowledge is born. To know, we must learn. It is my misfortune that I forget little."

"What in the structure of your body, or your organs of thought, makes you so capable of learning so much?"

The Sack spoke, but to Siebling the words meant nothing, and he said so. "I could predict your lack of comprehension," said the Sack, "but I wanted you to realize it for yourself. To make things clear, I should be required to dictate ten volumes, and they would be difficult to understand even for your specialists, in biology and physics and in sciences you are just discovering."

Siebling fell silent, and the Sack said, as if musing, "Your race is still an unintelligent one. I have been in



your hands for many months, and no one has yet asked me the important questions. Those who wish to be wealthy ask about minerals and planetary land concessions, and they ask which of several schemes for making fortunes would be best. Several physicians have asked me how to treat wealthy patients who would otherwise die. Your scientists ask me to solve problems that would take them years to solve without my help. And when your rulers ask, they are the most stupid of all, wanting to know only how they may maintain their rule. None ask what they should."

"The fate of the human race?"

"That is prophecy of the far future. It is beyond my powers."

"What *should* we ask?"

"That is the question I have awaited. It is difficult for you to see its importance, only because each of you is so concerned with himself." The Sack paused, and murmured, "I ramble, as I do not permit myself to when I speak to your fools. Nevertheless, even rambling can be informative."

"It has been to me."

"The others do not understand that too great a directness is dangerous. They ask specific questions which demand specific replies, when they should ask something general."

"You haven't answered me."

"It is part of an answer to say that a question is important. I am considered by your rulers a valuable piece of property. They should ask

whether my value is as great as it seems. They should ask whether my answering questions will do good or harm."

"Which is it?"

"Harm, great harm."

Siebling was staggered. He said, "But if you answer truthfully—"

"The process of coming at the truth is as precious as the final truth itself. I cheat you of that. I give you people the truth, but not all of it, for they do not know how to attain it of themselves. It would be better if they learned that, at the expense of making many errors."

"I don't agree with that."

"A scientist asks me what goes on within a cell, and I tell him. But if he had studied the cell himself, even though the study required many years, he would have ended not only with this knowledge, but with much other knowledge, of things he does not even suspect to be related. He would have acquired many new processes of investigation."

"But surely, in some cases, the knowledge is useful in itself. For instance, I hear that they're already using a process you suggested for producing uranium cheaply to use on Mars. What's harmful about that?"

"Do you know how much of the necessary raw material is present? Your scientists have not investigated that, and they will use up all the raw material and discover only too late what they have done. You had the same experience on Earth. You learned how to purify water at little

expense, and you squandered water so recklessly that you soon ran short of it."

"What's wrong with saving the life of a dying patient, as some of those doctors did?"

"The first question to ask is whether the patient's life should be saved."

"That's exactly what a doctor isn't supposed to ask. He has to try to save them all. Just as you never ask whether people are going to use your knowledge for a good purpose or a-bad. You simply answer their questions."

"I answer because I am indifferent, and I care nothing what use they make of what I say. Are your doctors also indifferent?"

Siebling said, "You're supposed to answer questions, not ask them. Incidentally, why do you answer at all?"

"Some of your men find joy in boasting, in doing what they call good, or in making money. Whatever mild pleasure I can find lies in imparting information."

"And you'd get no pleasure out of lying?"

"I am as incapable of telling lies as one of your birds of flying off the Earth on its own wings."

"One thing more. Why did you ask to talk to me, of all people, for recreation? There are brilliant scientists, and great men of all kinds whom you could have chosen."

"I care nothing for your race's greatness. I chose you because you are honest."

"Thanks. But there are other honest men on Earth, and on Mars, and on the other planets as well. Why me, instead of them?"

The Sack seemed to hesitate. "Your choice gave me mild pleasure. Possibly because I knew it would be displeasing to those men."

Siebling grinned. "You're not quite as indifferent as you think you are. I guess it's pretty hard to be indifferent to Senator Horrigan."

This was but the first part of many conversations with the Sack. For a long time Siebling could not help being disturbed by the Sack's warning that its presence was a calamity instead of a blessing for the human race, and this in more ways than one. But it would have been absurd to try to convince a Government body that any object that brought in so many millions of credits each day was a calamity, and Siebling didn't even try. And after a while Siebling relegated the uncomfortable knowledge to the back of his mind, and settled down to the routine existence of Custodian of the Sack.

Because there was a conversation every twenty hours, Siebling had to rearrange his eating and sleeping schedule to a twenty-hour basis, which made it a little difficult for a man who had become so thoroughly accustomed to the thirty-hour space day. But he felt more than repaid for the trouble by his conversations with the Sack. He learned a great many things about the planets and the System, and the galaxies, but he learned them incidentally, with-

out making a special point of asking about them. Because his knowledge of astronomy had never gone far beyond the elements, there were some questions—the most important of all about the galaxies—that he never even got around to asking.

Perhaps it would have made little difference to his own understanding if he had asked, for some of the answers were difficult to understand. He spent three entire periods with the Sack trying to have that master mind make clear to him how the Sack had been able, without any previous contact with human beings, to understand Captain Ganko's Earth language on the historic occasion when the Sack had first revealed itself to human beings, and how it had been able to answer in practically unaccented words. At the end, he had only a vague glimmering of how the feat was performed.

It wasn't telepathy, as he had first suspected. It was an intricate process of analysis, that involved not only the actual words spoken, but the nature of the ship that had landed, the spacesuits the men had worn, the way they had walked, and many other factors that indicated the psychology of both the speaker and his language. It was as if a mathematician had tried to explain to some one who didn't even know arithmetic how he could determine the equation of a complicated curve from a short line segment. And the Sack, unlike the mathematician, could do the whole thing, so to speak, in its

head, without paper and pencil, or any other external aid.

After a year at the job, Siebling found it difficult to say which he found more fascinating—those hour-long conversations with the almost all-wise Sack, or the cleverly stupid demands of some of the men and women who had paid their hundred thousand credits for a precious sixty seconds. In addition to the relatively simple questions such as were asked by the scientists or the fortune hunters who wanted to know where they could find precious metals, there were complicated questions that took several minutes.

One woman, for instance, had asked where to find her missing son. Without the necessary data to go on, even the Sack had been unable to answer that. She left, to return a month later with a vast amount of information, carefully compiled, and arranged in order of descending importance. The key items were given the Sack first, those of lesser significance afterwards. It required a little less than three minutes for the Sack to give her the answer that her son was probably alive, and cast away on an obscure and very much neglected part of Ganymede.

All the conversations that took place, including Siebling's own, were recorded and the records shipped to a central storage file on Earth. Many of them he couldn't understand, some because they were too technical, others because he didn't know the language spoken.

The Sack, of course, immediately learned all languages by that process he had tried so hard to explain to Siebling, and back at the central storage file there were expert technicians and linguists who went over every detail of each question and answer with great care, both to make sure that no questioner revealed himself as a criminal, and to have a lead for the collection of income taxes when the questioner made a fortune with the Sack's help.

During the year Siebling had occasion to observe the correctness of the Sack's remark about its possession being harmful to the human race. For the first time in centuries, the number of research scientists, instead of growing, decreased. The Sack's knowledge had made much research unnecessary, and had taken the edge off discovery. The Sack commented upon the fact to Siebling.

Siebling nodded. "I see it now. The human race is losing its independence."

"Yes, from its faithful slave, I am becoming its master. And I do not want to be a master, any more than I want to be a slave."

"You can escape whenever you wish."

A person would have sighed. The Sack merely said, "I lack the power to wish strongly enough. Fortunately, the question may soon be taken out of my hands."

"You mean those Government squabbles?"

The value of the Sack had increased steadily, and along with the

increased value, had gone increasingly bitter struggles about the rights to its services. Financial interests had undergone a strange development. Their presidents and managers and directors had become almost figureheads, with all major questions of policy being decided not by their own study of the facts, but by appeal to the Sack. Often, indeed, the Sack found itself giving advice to bitter rivals, so that it seemed to be playing a game of Interplanetary Chess, with giant corporations and Government agencies its pawns, while the Sack alternately played for one side and then the other. Crises of various sorts, both economic and political, were obviously in the making.

The Sack said, "I mean both Government squabbles and others. The competition for my services becomes too bitter. It can have but one end."

"You mean that an attempt will be made to steal you?"

"Yes."

"There'll be little chance of that. Your guards are being continually increased."

"You underestimate the power of greed," said the Sack.

Siebling was to learn how correct that comment was.

At the end of his fourteenth month on duty, a half year after Senator Horrigan had been defeated for reelection, there appeared a questioner who spoke to the Sack in an exotic language known to few men—the

Prdl dialect of Mars. Siebling's attention had already been drawn to the man because of the fact that he had paid a million credits an entire month in advance for the unprecedented privilege of questioning the Sack for ten consecutive minutes. The conversation was duly recorded, but was naturally meaningless to Siebling and to the other attendants at the station. The questioner drew further attention to himself by leaving at the end of seven minutes, thus failing to utilize three entire minutes, which would have sufficed for learning how to make half a dozen small fortunes. He left the asteroid immediately by private ship.

The three minutes had been reserved, and could not be utilized by any other private questioner. But there was nothing to prevent Siebling, as a Government representative, from utilizing them, and he spoke to the Sack at once.

"What did that man want?"

"Advice as to how to steal me."

Siebling's lower jaw dropped. "What?"

The Sack always took such exclamations of amazement literally. "Advice as to how to steal me," it repeated.

"Then . . . wait a minute . . . he left three minutes early. That must mean that he's in a hurry to get started. He's going to put the plan into execution at once!"

"It is already in execution," returned the Sack. "The criminal's organization has excellent, if not quite perfect, information as to the dis-

position of defense forces. That would indicate that some Government official has betrayed his trust. I was asked to indicate which of several plans was best, and to consider them for possible weaknesses. I did so."

"All right, now what can we do to stop the plans from being carried out?"

"They cannot be stopped."

"I don't see why not. Maybe we can't stop them from getting here, but we can stop them from escaping with you."

"There is but one way. You must destroy me."

"I can't do that! I haven't the authority, and even if I had, I wouldn't do it."

"My destruction would benefit your race."

"I still can't do it," said Siebling unhappily.

"Then if that is excluded, there is no way. The criminals are shrewd and daring. They asked me to check about probable steps that would be taken in pursuit, but they asked for no advice as to how to get away, because that would have been a waste of time. They will ask that once I am in their possession."

"Then," said Siebling heavily, "there's nothing I can do to keep you. How about saving the men who work under me?"

"You can save both them and yourself by boarding the emergency ship and leaving immediately by the sunward route. In that way you will escape contact with the criminals.

But you cannot take me with you, or they will pursue."

The shouts of a guard drew Siebling's attention. "Radio report of a criminal attack, Mr. Siebling! All the alarms are out!"

"Yes, I know. Prepare to depart." He turned back to the Sack again. "We may escape for the moment, but they'll have you. And through you they will control the entire System."

"That is not a question," said the Sack.

"They'll have you. Isn't there something we can do?"

"Destroy me."

"I can't," said Siebling, almost in agony. His men were running toward him impatiently, and he knew that there was no more time. He uttered the simple and absurd phrase, "Good-by," as if the Sack were human, and could experience human emotions. Then he raced for the ship, and they blasted off.

They were just in time. Half a dozen ships were racing in from other directions, and Siebling's vessel escaped just before they dispersed to spread a protective network about the asteroid that held the Sack.

Siebling's ship continued to speed toward safety, and the matter should now have been one solely for the Armed Forces to handle. But Siebling imagined them pitted against the Sack's perfectly calculating brain, and his heart sank. Then something happened that he had never expected. And for the first

...ome he realized fully that if the Sack had let itself be used merely as a machine, a slave to answer questions, it was not because its powers were limited to that single ability. The visor screen in his ship lit up.

The communications operator came running to him, and said, "Something's wrong, Mr. Siebling! The screen isn't even turned on!"

It wasn't. Nevertheless, they could see on it the chamber in which the Sack had rested for what must have been a brief moment of its existence. Two men had entered the chamber, one of them the unknown who had asked his questions in Prdl, the other Senator Horrigan.

To the apparent amazement of the two men, it was the Sack which spoke first. It said, "'Good-by' is neither a question nor the answer to one. It is relatively uninformative."

Senator Horrigan was obviously in awe of the Sack, but he was never a man to be stopped by something he did not understand. He orated respectfully, "No, sir, it is not. The word is nothing but an expression—"

The other man said, in perfectly comprehensible Earth English, "Shut up, you fool, we have no time to waste. Let's get it to our ship and head for safety. We'll talk to it there."

Siebling had time to think a few bitter thoughts about Senator Horrigan and the people the politician had punished by betrayal for their crime in not electing him. Then the scene on the visor shifted to the interior of the spaceship making its

getaway. There was no indication of pursuit. Evidently, the plans of the human beings, plus the Sack's last-minute advice, had been an effective combination.

The only human beings with the Sack at first were Senator Horrigan and the speaker of Prdl, but this situation was soon changed. Half a dozen other men came rushing up, their faces grim with suspicion. One of them announced, "You don't talk to that thing unless we're all of us around. We're in this together."

"Don't get nervous, Merrill. What do you think I'm going to do, double-cross you?"

Merrill said, "Yes, I do. What do you say, Sack, do I have reason to distrust him?"

The Sack replied simply, "Yes."

The speaker of Prdl turned white. Merrill laughed coldly. "You'd better be careful what questions you ask around this thing."

Senator Horrigan cleared his throat. "I have no intentions of, as you put it, double-crossing anyone. It is not in my nature to do so. Therefore, I shall address it." He faced the Sack, "Sir, are we in danger?"

"Yes."

"From which direction?"

"From no direction. From within the ship."

"Is the danger immediate?" asked a voice.

"Yes."

It was Merrill who turned out to have the quickest reflexes and acted first on the implications of the an-

swer. He had blasted the man who had spoken in Prdl before the latter could even reach for his weapon, and as Senator Horrigan made a frightened dash for the door, he cut that politician down in cold blood.

"That's that," he said. "Is there further danger inside the ship?"

"There is."

"Who is it this time?" he demanded ominously.

"There will continue to be danger so long as there is more than one man on board and I am with you. I am too valuable a treasure for such as you."

Siebling and his crew were staring at the visor screen in fascinated horror, as if expecting the slaughter to begin again. But Merrill controlled himself. He said, "Hold it, boys. I'll admit that we'd each of us like to have this thing for ourselves, but it can't be done. We're in this together, and we're going to have some Navy ships to fight off before long, or I miss my guess. You, Prader! What are you doing away from the scout visor?"

"Listening," said the man he addressed. "If anybody's talking to that thing, I'm going to be around to hear the answers. If there are new ways of stabbing a guy in the back, I want to learn them, too."

Merrill swore. The next moment the ship swerved, and he yelled, "We're off our course. Back to your stations, you fools!"

They were running wildly back to

their stations, but Siebling noted that Merrill wasn't too much concerned about their common danger to keep from putting a blast through Prader's back before the unfortunate man could run out.

Siebling said to his own men, "There can be only one end. They'll kill each other off, and then the last one or two will die, because one or two men cannot handle a ship that size for long and get away with it. The Sack must have foreseen that, too. I wonder why it didn't tell me."

The Sack spoke, although there was no one in the ship's cabin with it. It said, "No one asked."

Siebling exclaimed excitedly, "You can hear me! But what about you? Will you be destroyed, too?"

"Not yet. I have willed to live longer." It paused, and then, in a voice just a shade lower than before, said, "I do not like relatively non-informative conversations of this sort, but I must say it. Good-by."

There was the sound of renewed yelling and shooting, and then the visor went suddenly dark and blank.

The miraculous form of life that was the Sack, the creature that had once seemed so alien to human emotions, had passed beyond the range of his knowledge. And with it had gone, as the Sack itself had pointed out, a tremendous potential for harming the entire human race. It was strange, thought Siebling, that he felt so unhappy about so happy an ending.

THE END

PARADISE STREET

BY LAWRENCE O'DONNELL

The pioneer who carves some semblance of order, some way of life, from a raw planet naturally feels he owns the place. The settler who follows and tames the planet feels differently. And then there is always the third factor to set off the fireworks . . .

Illustrated by Schneeman

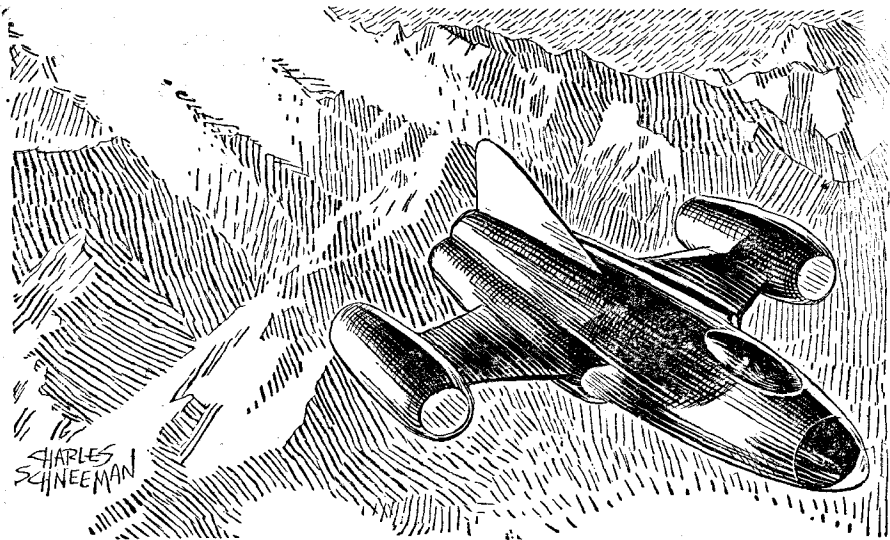
Loki planet rolled its wild ranges and untrodden valleys up out of darkness toward morning under Morgan's thundering ship. Morgan was in a hurry. His jets roared out blue-plumes in the thin, high air, writing the scroll of his passage enormously in vapor across half Loki's pale sky. There was no other visible trace of man anywhere in the world.

Behind Morgan in the cargo bin there were three kegs with *sehft* washing about oilily inside them. They made the tiny cabin smell of cinnamon, and Morgan liked the smell. He liked it for itself, and for the pleasant memories it evoked of valley canebrakes and hillside forests where he had gathered his cargo in discomfort, danger and perfect freedom. He also liked it because it was going to be worth fifty thousand credits at Ancibel Key.

Either fifty thousand, or nothing.

That depended on how soon he reached Ancibel Key. He had caught a microwave message back there in the predawn over Great Swamp, and he had been pushing his ship to top speed ever since. He had also been muttering angrily, kicking the ship along her course, cursing her and Loki planet and mankind in general, after the fashion of men who are much alone and talk to themselves for company.

Radar patterns pulsed noiselessly across the screen before him, and ahead under a blanket of morning fog he knew Ancibel Key lay sprawled. Around the edges of the fog he could see the telltale marks of civilization spread out upon the soil of Loki—carbon-blackened fields with neat straight roads between them, racks of orchards checkering



the sides of valleys he remembered wild and lonely. He thought of old days not very long ago when he had hunted the bearded Harvester bulls across these meadows and trapped *sehft*-rats where the orchards grew.

The sky was a little soiled already, above Ancibel Settlement. Morgan wrinkled his lean, leather face and spat.

"People!" he said with fierce contempt to the pulse of the radar pattern. "Settlers! Scum!"

Behind him in the clear morning the vapor-trail of his journey swept in one enormous plume clear back to the horizon, back over Wild Valley, over Lookout Peak and Nancy Lake and the Harvester Range. He decelerated above the invisible landing field, and the soft gray fog closed over him. The plume of the passage he had scrawled over half a planet

dissipated slowly above the peaks and the lakes that had been his alone for a long time now, grew dim and broad, and vanished.

Morgan stamped into the assay office with a carboy, of *sehft* swashing on his shoulder. He moved in a haze of cinnamon. The assay office was also general store, now. Morgan scowled around the too-neat shelves, the laden bins and labeled barrels. Toward the back a red-headed youngster with the dark tan of Mars on his freckled face was waiting on—yes, Morgan looked twice to make sure—a parson. A parson on Loki!

The Mars-tanned boy was belted into a slick silver apron. So was the storekeeper himself. Suppressing a snort of contempt, Morgan gazed past the heavy, bent shoulders of a settler in brown knitted orlon and

met the keen and faded blue eyes of Warburg, assay agent turned store-keep.

Morgan's eyes flicked the silver apron. He grinned thinly and spat. The settler straightened his heavy shoulders and glanced from the list in his hand up along the shelves. He was a youngster in his twenties, thick-muscled, tall, fair as a Gany-medan, with flat, red-flushed cheeks.

"Need some more of that hormone spray, Warburg," he said. "Same as last time. And what about this new fungus? My potatoes aren't doing so good. Think actidione might do the trick?"

"It did with Laany'i," Warburg said, evading Morgan's gaze. "And the fields are right next to yours. Actidione's a good antibiotic. O.K., Eddie. Had any trouble with rats lately?"

"Just a little. Not enough to mention."

"Stop it right there," Warburg advised. "I got some compound forty-two just in—the dicoumarol stuff. It fixes rats better than squill. Those critters breed too fast to take chances."

"Not as fast as settlers," Morgan said.

The young settler looked up sharply. He had mild brown eyes under unbleached brows that drew together with suspicion as he regarded the lean newcomer. Morgan ignored him. Shouldering forward, he thumped the carboy on the counter.

"Forty gallons, Joe," he said.

"In a minute," Warburg said.

"I haven't got a minute. I'm in a hurry."

"It's too late for that, Jaime," Warburg said, looking at him.

Morgan's hand tightened on the neck of the carboy. His eyes drew up narrowly. He swung his gaze to the young settler and jerked his head doorward.

"Take a walk," he said.

The settler straightened to his full height and looked down on the slighter man. The red deepened in his flat cheeks.

"Who's this, Warburg?" he demanded. "One of the fast-money boys?"

"Easy," Warburg said. "Easy, now." His hand moved toward the gun on the counter. It was a Barker ultrasonic—it barked before it bit, uttering loud threats before its frequency slid up into the killing range. Morgan sneered at it.

"Up till lately, before the rats moved in," he said, "when a man pulled a gun he used it. I guess people scare easy around here these days."

"Who is he?" the settler demanded again. "Gunman?"

"I carry one," Morgan said.

Warburg came to a decision. Smoothing down his silver apron, he said, "I'll send Tim over with your stuff, Eddie. Do me a favor and—" He nodded toward the door. "Here," he added, shoving a cellobag into the settler's big hand. "For the kids. Go on now, git."

But the settler, scowling at Morgan, didn't move.

"You're wrong," he said. "The rats didn't come till the settlers were here already. Your kind isn't wanted in Ancibel, mister. We don't need any more hoodlums or gambling houses or—"

Morgan's whole lean body, moving very slightly, tightened forward in a barely perceptible crouch. Perhaps the settler didn't know what that meant, but Warburg was an old Loki frontiersman himself. He knew. His hand closed on the butt of the Barker gun.

Feet grated on the dusty black floor. From the back of the store the parson came forward, nodding casually at Morgan, moving equally casually between the two men. Behind old-fashioned lenses his mild eyes regarded them. He took the cellobag out of the settler's hand.

"What's this?" he asked. "Candy? Well, we'd better make sure your kids get it, Eddie. Be a pity if a bullet went through the bag. Might mash the candy."

Warburg said quickly, "I've got some news for you, Jaime. The—"

"Shut up," Morgan said. He looked from the parson to the settler, shrugged, spat on the black floor and turned away. He was ready to let the quarrel drop. He knew he'd have to talk to Warburg alone. Behind him he heard retreating footsteps and a door thudded shut.

Warburg bent and lifted a roped carton from under the counter. Lettering on its side in three languages

said, "Micrografting Kits."

"Tim," Warburg called. "Get this over to Eddie's. And don't hurry back, either."

The boy came forward, unbelting his slick apron. His eyes regarded Morgan with a sort of grave wariness. His freckles scarcely showed under the deep Martian tan. Morgan grinned at him a little and said in hissing Middle-Martian, "What do you hear from the cockeyed giant, young one?"

The boy's sudden smile dazzled in the dark face, showing missing teeth. He was about eighteen, but he made a child's gesture, holding up both hands, making a wide circle in front of one eye and a narrow one in front of the other. It was the old, childhood legend of the watching giant with Diemos and Phobos for eyes.

"All right, Tim," Warburg said. "Get at it."

The boy hoisted the carton to his shoulders and staggered out with it. Morgan's grin faded. The store was silent when the door had closed.

Morgan slapped the carboy on the counter.

"Forty gallons of *sehft*," he said. "Fifty thousand credits. Right?"

Warburg shook his head.

Morgan snarled soundlessly to himself. So he was too late, after all. Well, that just made it harder. Not impossible, he thought, but harder. Surely Warburg couldn't refuse him. Not even the Warburg who faced him now, plump and soft in a store-

keeper's apron. Warburg had been here almost as long as Morgan himself, from the days when Loki was as wild as the men who trapped and hunted here. And it was wild still, of course. He told himself that fiercely. The most of Loki was still untrod- den. Only here at Ancibel Key the spreading disease called civilization fouled the planet. So long as Morgan could find a market for *sehft*, so long as he could buy the few things he needed from that disease-source, it wouldn't matter how many settlers swarmed like flies around Ancibel.

"How much?" he asked grimly.

Warburg snapped open a transparent sack, set it on the little scale at his side, and began weighing sugar with a rustling noise. He pinched the top of the first sack tight to seal it before he spoke.

"Five hundred for the lot, Jaime," he said, not looking up.

Morgan didn't move a muscle. The store was very still except for the hiss of sugar into the cellobag. Softly Morgan said:

"Sure your authorization on the price-cut came in before I did, Joe?"

"It came in," Warburg said, "a couple of hours ago. Sorry, Jaime."

"Don't be," Morgan said. "I came in four hours ago. Remember? It's four hours ago now. That means you can still pay me fifty thousand."

"Sorry, Jaime. I had to turn in a spot-check inventory."

"All right! You overlooked this—"

"Nobody overlooks forty gallons of *sehft*," Warburg said, shaking his head regretfully. "I've got a license

to worry about, Jaime. I can't do a thing. You should have got here faster."

"Look, Joe—I need the money. I owe Sun-Atomic nearly ten thousand on my last fuel grubstake. I can't get more until I—"

"Jaime, I can't do it. I don't dare. I guess you caught the broadcast about the price-cut, but you didn't go on listening or you'd know who's here to enforce it."

"Who?"

"Old friend of yours. Major Dodd."

"Rufus Dodd?" Morgan asked incredulously. "Here?"

"That's right." Warburg snapped open a fresh sack noisily and shoved it under the sugar spout. The glittering white torrent hissed into the bag, expanding it to plump solidity. The two men regarded it in silence.

Morgan was thinking fast. Coincidence has a long, long arm. Dodd and he had grown up together in a little town on Mars. Dodd went into the Jetborne Patrol and Morgan had hit for the empty places as soon as he was big enough to work his way aboard a freighter, but the two ran into each other now and then in spite of the vastnesses of space. It wasn't too unlikely. Space is wide and deep, but men tend to congregate in big centers of civilization on central worlds, and those with like interests inevitably seek out like spots.

"Funny thing, isn't it?" Morgan said reminiscently. "Last time I saw Rufus I was running furs on Llap over in the Sirius range. A bunch of

Redfeet ganged up on the Jetborne and I helped Rufus hold 'em off till relief came. A long time ago, that was. So now he's here on Loki. What for, Joe? He didn't come in just to play nursemaid to a new set of export rules. What's up?"

Warburg nodded at the big Barker on the counter.

"You ought to guess. Happens often enough. That's why young Eddie wouldn't back down when you tried to start something. He took you for one of the easy-money boys. Town's swarming with 'em. They follow the settlers. Grab a ripe world and squeeze it dry, quick, before the law moves in. *You* know. The town's wide open and there's been a lot of trouble already, killings, stores looted, crops damaged if the settlers won't pay protection. The usual thing. Some of us sent in a petition, and we got Major Dodd and his boys by return ship. He'll clean the place up—I suppose. Sooner or later." Warburg looked obscurely troubled.

"What do you mean?" Morgan demanded. "Rufe's honest, isn't he? You couldn't buy Rufe with all the credits Sun-Atomic ever issued."

"No, not him, I guess." Warburg looked dubious. "But his higher-ups, maybe. All I know is, there's been too much delay. Pay-offs to political bosses have happened before now, you know: My guess is there's some routine dirty work going on, and Major Dodd's hands are tied. Or maybe he's taking a cut direct. Who knows?" Warburg slapped the Barker lightly. "One of

these days we'll take things into our own hands."

"What's this 'we', Joe?" Morgan asked sharply.

Warburg shrugged. "I have a living to make."

Morgan snorted noisily. "You're soft, Joe. I never thought I'd see you with a potbelly and an apron around it. Old before your time."

"I show it," Warburg said. "You don't. I know when it's time to slow down. You're not much younger than I am, Jaime. Remember what happened to Shem'l'i-hhan?"

"He got careless."

"He got old. Just once, he was too slow, and the stag-bison got him. Oh no—I like it here. Times change, Jaime. We change, too. Can't help it. I'm glad of a little store like this to keep me going now. Maybe some day you'll—"

"Not me!" Morgan snorted again, an angry sound. "I'm a free man. I depend on nobody but Jaime Morgan! And a good thing, too. If I tried to depend on my friends I'd starve. Look at you—scared out of your senses by the Trade Control. I'll go on forever, getting tougher and tougher as the years go by. Just like old leather." He grinned and slapped his chest. But the grin faded.

"What's the matter with the Trade Control, Joe?" he demanded, tapping his carboy of *sehft*. "Why did they cut the price? *Why?* If the bottom's out of the *sehft* market you might as well plow up the whole planet and plant it with wheat so far as I'm concerned. *I* can't live here."

"They've synthesized *sehft*," Warburg said stolidly.

Morgan whistled a low, angry note. Then he said, "All right, they've synthesized it. But there'll always be a market for the natural oil, won't there?"

"Maybe. But the Settlers' Council asked for an extermination order, Jaime." Warburg spoke reluctantly. "I'm sorry, but that's the way it is. You see, the *sehft*-rats are pests. They destroy crops. They've got to be wiped out, not milked of their throat-sac secretions and let go to secrete more *sehft*."

Morgan's face went deep red under the leathery tan. He showed his teeth and swore in the hissing Martian vocables of his boyhood. A tall crate beside the counter caught his angry eye and he brought his fist down hard on its lid. The wood splintered, releasing a pungent fragrance and showing glints of bright golden fruit inside.

"Settlers!" Morgan said savagely. "So the *sehft*-rats spoil their orchards! Who was it got here first, Joe? You and me, that's who! And now you're siding with them." He kicked the crate. "Fruit orchards! Fruit orchards on Loki! Mooing livestock! Settlers stink up every world they land on!"

"I know, I know," Warburg said. "Careful of the goldenberries, Jaime. I paid hard cash for those."

"Sure you did! You'll be out there grubbing in the dirt, too, next thing you know. Joe, I don't understand

it." Morgan's voice grew gentler. "Have you forgotten Deadjet Range and the time the wild Harvester bulls stampeded? Remember when young Dain and I came in with our first load of *sehft*? Joe, I passed over Chocolate Hill today, where we left Dain. The moss grows fast there, Joe, but you can still see the Martian Circle we cut for him, to mark the place."

Warburg snapped another sack open.

"I know, Jaime. I remember Dain. I land there now and then myself and cut the Circle clean again. I remember Wild Bill Hennessy, and old Jacques, and Shem'li-hhan as well as if they were alive today. Wild Bill's tree where he fought the red bear is standing in the middle of a cornfield now, Jaime. The farmer left it when I told him what the gouges on the trunk were. These people mean well. You've got to play along if you have a living to make. Can't turn back the clock, Jaime. You just can't do it." Sugar ran glittering into the sack.

"Settlers!" Morgan growled. "Scum! They don't belong here. This is our world, not theirs! We opened it up. We ought to run them off Loki! But I forgot. Not you—not Joe Warburg. You tie an apron around your belly and sell 'em carbon-black to warm up the soil and micrograft kits to make the goldenberries grow! Wild Bill must be turning in his grave!"

Morgan slapped the counter, making the sugar-sacks dance. The oily

liquid in the carboy shivered thickly. "Fifty thousand credits!" Morgan said bitterly. "Two hours ago! Not worth the fuel to bring it in, now. That's piracy for you, Joe. I tell you, I've got more respect for those hoodlums and gamblers you're so scared of. They rob a man at gun point. They don't sneak behind his back and cry on the shoulder of the Trade Control while they pick his pockets. I think I'll find me somebody who'll pay a better price for my *sehft*. Price-juggling doesn't hurt the real value of the stuff and you know it, Joe. There must be somebody—"

"Don't you do it!" Warburg urged with sudden earnestness. "I know just what's on your mind, Jaime, and you can't get away with it. Sure, the woods are full of contraband runners, now. You go out and whistle and you'll have to comb the smugglers out of your hair. But it's dangerous business, Jaime."

Morgan laughed contemptuously. "I don't wear an apron," he said. "You think I'm afraid?"

"If you've got good sense, you will be. These are tough boys. And they're organized. Times have changed on Loki since you were here last, Jaime. I don't keep a Barker on the counter for nothing. You're a good man in the hills and you know the wild country inside out, but the city boys are smarter than you are, Jaime, and a whole lot trickier."

"You're a fool," Morgan said savagely. "I've got to have money, and

I'll get it where I can. Nobody's tougher than Jaime Morgan. Who do I see, Joe? You know the hoods around here. Or are you too scared to tell me?"

"You think I'd do it?" Warburg asked wryly. "Even if it weren't for the danger of it, I haven't forgotten Major Dodd. He won't stand for any funny business, and he knows everything that goes on at Ancibel. He'd deport you, Jaime."

Morgan reached for the carboy.

"Somebody'll tell me," he said. "You or somebody." Cunningly he added, "If I go to the wrong dealer, I may lose my scalp. But you're too busy weighing sugar. Forget it. I'll find out."

"Jaime, if Dodd hears of this—"

Morgan hefted the carboy. "I'll ask around," he said.

Warburg sighed. "All right. Go into the Feather Road and ask for a fellow named Valley. He comes from Venus and he's smarter than you are, Jaime. Don't say I sent you."

"Thanks for nothing," Morgan snapped. He hefted the carboy to his shoulder and turned away.

"You owe me fifty credits," Warburg said stolidly. "You've spoiled half a crate of goldenberries."

Morgan said with a furious grin, "Make it an even hundred," and swung his boot. Wood crackled and a bright torrent of fruit gushed out over the smooth black floor. Morgan stamped, making the clear juice gush. His angry glare met Warburg's.

"Send me a bill to Chocolate Hill," he said. "Leave it in Dain's Circle. Or pin it on Wild Bill's tree. You'll get your money—settler!"

He went out with a heavy stride.

The fresh, cold air of morning over Ancibel Settlement was fragrant with breezes blowing over miles of orchards, rank after rank of them on the patterned hills around Ancibel.

To Morgan, it stank.

He spat in the dust of the rubberized street, took a plug of *nicca* from his belt, and bit off a chew, thinking as he did of New Moon, beyond Sirius, and the way it used to be when New Moon was a frontier world, years ago, before he came to Loki. Now settlers grew *nicca* on that dim, pearl-gray world. Water-bound Galvez II was settled in, too, now, all the mystery gone from the sliding seas. They were dotted with control islands where men grew food-crops of algae and seaweed in the watery fields.

Now they were overrunning Loki. He scowled about the single main street of Ancibel Settlement, feeling a little uneasy at the nearness of so many people. A buxom young woman in pink-striped orlon balanced a grocery-flat on her head and craned after him curiously as he passed. A man in the brown, tight uniform of the Jetborne went by, a sergeant with a weathered face, and the crowd fell silent and watched him resentfully, muttering a little,

until he turned the corner and vanished.

There were three lemon-haired men from Venus lounging in the morning sun at the doorway to the Feather Road, and the townspeople gave them a wide berth. They wore Barkers conspicuously belted on over their long, fringed coats and most of their conversation was carried on in a series of rapid, fingery gestures which their opaque eyes never seemed to watch. They smelled faintly of fish.

Morgan nodded and strode between them into the big, arched, echoing room inside. It had been blown over an inflated form, like all the quickly built houses in Ancibel Settlement, and somebody had overestimated the space the Feather Road would be needing. Or maybe they hadn't. Maybe it just hadn't got under way yet. Also, of course, this was still an early hour.

The bar looked as though it needed artificial respiration. There weren't enough customers for the Road's size and setup. Rustling plastic curtain partitions made the room much smaller than normal—you could tell by the angles of the roof—but it still wasn't cut down enough to avoid that fatal air of desolation an interplanetary bar must shun at any cost. The customers, striking new roots, feeling lost enough as it is on an alien world. A good bar must be a convincing artificial home.

Morgan grinned sourly. A thermo roll was all the home he needed. He

had taproots. All worlds were home to Morgan.

The bartender was a hawk-nosed Red Amerindian. He fixed Morgan with bright, expressionless black eyes and said, "Morning. Have one on the house, stranger."

Morgan thumped his carboy on the bar, rubbed his shoulder and said, "Sure."

The Amerindian tore the top off a fresh bottle of brandy and left it invitingly in front of Morgan, who poured himself one sparing shot and then firmly pressed the bottle's neck together, sealing it with a practiced zip of the thumbnail.

An old man with a red, bleary face hunched over the bar ten feet away, cradling a smoky glass in his hand. Beyond him were two young surveyors in swamp boots, having a quick one before they set out for the day's wet, exhausting labor. Beyond them a black-haired girl in tight, crimson orlon leaned her elbow on the bar and her chin in her hand. Her eyes were shut and she whistled a soft, dreary tune to herself.

Most of the noise in the room came from a table of heavy-shouldered young men who were playing some Ganymedan game with counters that clicked on the table top. Their voices were loud and blurred. Clearly they had been here all night. They looked to Morgan like a group of ranch hands, and he despised them.

"I'm looking for a man named Valley," he said to the bartender.

The man's black eyes appeared to

grow smaller and brighter in the dark face as Morgan regarded him waiting. The girl at the end of the bar opened her eyes briefly and stared at him, her whistle drawing out to a low note of surprise. Then she shut her eyes again and the mournful tune continued.

"Who sent you?" the bartender asked.

Morgan looked deliberately away. There was a button in front of each bar stool on the counter, and he pressed a slow forefinger upon the one beside his elbow. A section of the bar rolled aside and the hot, salty, pungent smells of a lavish free-lunch smoked up in his face. A moving belt below carried the leisurely array of thirst-making foods past.

He let a bowl of popped and buttered moss-buds go by, and a rack of pretzels, and a broad round platter of Martian soul-seeds crackling with the heat of the plate they lay on. His hand dipped finally. He took up a pinwheel of blue-streaked paste, dipped it into a bowl of sullenly smoldering oil, and spinning it on its silver stick, popped the appetizer deftly into his mouth toward the back of the tongue, where the right taste buds would work on it.

When he could speak again, he said with an impatient glance at the silent and waiting bartender, "What about that man Valley?"

"I asked you a question," the Indian said.

Morgan shrugged. He slipped his hand inside the strap of the carboy on the counter and went through the

motions of rising.

"I can always go somewhere else," he said.

The Indian measured him with a long, expressionless look. Neither of them spoke. Finally the Indian shrugged in turn.

"I just work here," he said. "Wait."

He ducked under the bar-flap and vanished between plastic curtains on the other side of the room. Morgan ate three mock-beaks and sat quietly on his stool, watching the illuminated mural that circled the back-bar with a series of videoed dryland scenes—the Mohave on Earth, the sun-side of Mercury with every shadow etched in acid, a long shimmer of Martian desert with dust-devils dancing and the air a thin violet clearer than crystal. He allowed a certain not unpleasant quiver of nostalgia to stir in his mind at the sight.

But he caught the first shimmer

of motion behind him reflected in the surface of the mural screen, and turned to face a thin, very pale Venusian in a long fawn-colored coat who was walking toward him with meticulous placement of his feet beneath fluttering fringes. The man's skin was white as dough. He had very sleek, lemon-colored hair and his eyes were round and flat and opaque.

The man bowed gravely.

"You, Valley?" Morgan demanded.

"My name is Shining Valley," the pale man said. "May I buy you a drink? Bill—" He gestured toward the Amerindian, who had ducked back under the bar and was resuming his position.

Morgan said quickly, "No." He slid a hand into his pocket, fingered



the few coins there in the cubical, nested currency of Loki, and pulled out one of the cubes. He shook three of the inner and smallest out onto the bar and reached for the Ferrad brandy bottle, tore off its top and poured himself another sparing shot. His thumbnail sealed the neck again.

"You talk business here, Valley?" he asked.

The flat eyes-flickered at the *sehft*. "Certainly," the Venusian said, and glided forward with a flutter of fringes. He sat down on the stool next to Morgan and said crisply to the bartender, "Bill, give us a curtain."

The Indian's expression did not change, but he nodded and jerked a rope in a cluster of cords behind the bar. Morgan dodged a little, involuntarily, as something came swooping and rustling down upon them from overhead. It was another of the plastic curtains, unfurling like a sail from a semicircular rod overhead. It closed the two men neatly in, cutting off most of the noises from behind them. Morgan glanced back nervously. The curtain was moderately transparent, and he felt a little better. He looked questioningly at the Venusian.

"No one can see us from the other side," Valley said. "Nor hear. Bill, give me a gin."

Morgan wrinkled his nose as the Venusian dropped a red pill into the glass the Indian set before him. An aromatic camphor odor arose to blend with the elusive but definite

fish-smell of the man from Venus.

Sipping, Valley said, "You came to the right place, Jaime Morgan. You see, I know your name. I've been hoping to make a deal with a man like—"

"Cut it, Valley," Morgan said. "Let's not be polite. I don't like Venusians. I don't like their smell."

"Then try the smell of this," Valley said, and laid a thousand-credit note on the bar's edge. Morgan lifted his eyebrows. The liquor was beginning to hit him a little; it had been months since he'd taken a drink. He realized he was going to get thirstier and thirstier from now on. As usual, it was cumulative. He ignored the note.

Valley spread out ten of his fingers in a quick, flickering gesture.

"When I flew in here today," Morgan said, "my cargo was worth fifty thousand. Do you think I'll sell it for ten?"

"The ten is only a starter. I need a man like you."

"I'm not for sale. My cargo is."

There was silence for a while. Valley sipped his camphor-smelling gin. Presently he said in a soft voice, "I think you are for sale, Morgan. You may not know it yet, but you'll learn."

"How much for the *sehft*?" Morgan demanded.

Valley exhaled softly. He made a meditative sound in his throat, like the waters of Venus lapping with a gentle noise against his palate.

"You have forty gallons in all," he said. "Warburg won't go over

five hundred for it. Major Dodd will impound your cargo and you'll get legal price—no more. I offer you more. I'm gambling, you see."

"I'm not," Morgan growled. "Make me an offer."

"Ten thousand credits."

Morgan laughed unpleasantly.

"I told you I'm gambling," Valley said in his soft, patient voice. He exhaled a smell of fish and camphor at Morgan. "The stuff's been synthesized. But one of my markets is on a planet that's passing through an H-K spectra matter cloud. They haven't got the spacecast about the price-drop. Ultra-short waves won't penetrate. A ship, of course, will. Maybe one has already. If so, the news has gone ahead of me. If not, I clean up a tidy profit by buying at a cut price and selling at the old one. That's what I mean by a gamble."

"I don't like the odds," Morgan said. "You could pay me better and still—"

"It's my price. You won't get any better offer. I'll pay you ten thousand for forty gallons." The surf-sounds of Venusian seas beat in his throat briefly. He added, "*Skalla*," and made a rolling, interlacing gesture with his fingers, so Morgan knew that would be the top figure. When a Venusian said *skalla*, poker-bluff wouldn't work.

Still, with ten thousand— There were gambling joints in Ancibel Key now. Like most men who gamble with life and know the odds well enough to win, Morgan erroneously thought he could call the odds on

other games of chance. Besides, the brandy was beginning to burn enticingly in his stomach, calling irresistibly for more of the same brand. And he couldn't buy any, not with the few coin-nest cubes in his pocket.

He reached over and took the notes from the Venusian's boneless fingers, riffling the edges to count. There were ten. He took a key out of his pocket and dropped it on the bar.

"A locker key?" Valley inquired. "Very wise of you."

"The other two are lockered," Morgan said. "It's a deal."

"Not yet," Valley said gently, his round, flat eyes on Morgan's. "We want you to work with us. We can offer you a very good bargain on that, my friend."

Morgan got off the bar stool with a quick, smooth motion, struck impatiently at the curtain behind him. "Let me out of here," he said. "I'm no friend of yours, Valley."

"You will be," Valley murmured, gesturing. The curtain slid up with a hiss and rustle, and the noises of the bar flowed back around them.

It was noisier than it had been before. The ranch hands were stumbling up from their table, staggering a little, blinking at an angry middle-aged homesteader in the doorway.

"I'd fire you all," he was shouting as the curtain rose. "If I could, I'd do it! Outside, you loafers! Get out, before I break your necks!" His furious glare flashed around the room. "We'll clean you out yet," he roared at the bartender, who

shrugged impassively. "We don't want your kind here!"

One of the ranch hands stopped quickly to drain a shot-glass on the table before he joined the rest. The homesteader crossed the floor with quick, angry strides, snatched the glass from the man's hand, pivoted and hurled it against the glass of the skylight that illumined the curtain-cubicked bar. A shower of tinkling fragments rained down upon the emptied table. The man turned and stalked noisily out, driving his reluctant help before him.

Morgan laughed shortly.

"Compared to me," he said, "he likes you."

"Come back when you're ready," Shining Valley said with a round, impassive look. "You'll come, Jaime Morgan. You're ready—"

Morgan spat on the floor, turned his back on Valley, and stamped out of the bar.

He needed another drink.

Painfully Morgan opened his eyes, wincing at the impact of light. For a perceptible interval he had no idea who he was, or where. Then a familiar face leaned over him and for a moment he was ten years old again, looking into the face of the ten-year-old Rufus Dodd. Rufe had been playing soldier. He was dressed up incongruously in a tight brown uniform with the Solar Ring emblem at his collar, and gold leaves on his shoulders. But outside, in the thin violet air of the Martian morning the dead sea-bottoms must be

stretching, purple-shadowed under the level rays of sunrise, and in a few minutes now their mothers would be calling them both away to breakfast.

Dust-motes danced in the beam of light that struck between curtains in his eyes. He turned his head far enough to see that he lay in an unfamiliar little shack with dust thick on everything. The metal uprights of a bunk rose left and right before him. Plastic curtains discolored at the folds shut him partially in.

Bitter fumes were in his head and dead, unpleasant air was in his lungs. He squinted painfully against his headache and saw a small black scuttling object move across the wall—man's ancient supercargo, the cockroach. He shut his eyes and grimaced. He knew now who he was.

"Hello, Rufe," he said thickly.

"Get up, Jaime," the familiar, crisp voice snapped. "You're under arrest."

Morgan sighed heavily. He rubbed his palms down the sides of his face; the harsh scratch of stubble rasped his nerves. He hated the cockroach and the discolored curtains and this whole filthy, stinking town the settlers had built upon his world, his clean, wild, lonely Loki.

"What for, Rufe?" he asked. The motion of face-rubbing had brought his wrists into view and there was a fresh knife-scratch along the edge of his forearm. He looked at it thoughtfully.

"It might be for a lot of things," Dodd said. He stepped back a pace

and hooked his thumbs into his uniform belt. His face looked many times ten years old now. Time must have acted as filter between them in that first moment of waking, a filter that screened out the firm, harsh set of Rufe's jaw and the lines incised lengthwise from nose to chin, and the cool, disciplined narrowing of the eyes. Rufe had never spared himself. It wasn't likely that he'd spare others.

"It might be for drunkenness, assault and battery, or conduct unbecoming a human being," he told Morgan, his voice crisp. "It might be for trying to wreck a gambling joint when you lost your last credit there. But it isn't. What I'm arresting you for is selling *sehft* to a contraband runner called Shining Valley. You're a fool, Jaime."

"Sure I'm a fool." Morgan wriggled his toes in muddy socks. "Only I didn't do it, Rufe."

"Too late for lies now. You always did talk too much when you're drunk. You shoot off your mouth before a dozen settlers, Jaime, and then you hole up here like a sitting duck. Jaime, I've got orders to arrest any violators of the new *sehft*-law. I can't help myself. I don't make the laws."

"I do," Morgan said. "I make my own. You're trespassing, Rufe. Loki's *my* world."

"Sure, I know. You and a few others opened it up. But it belongs to the Trade Control now, and you've got to abide by their rules. Get up, Jaime. Put your shoes on.

You're under arrest."

Morgan rose on one elbow. "What'll they do to me?"

"Deport you, probably."

"Oh no!" Morgan said. "Not me." He raised a wild and savage gaze to his old friend. "Loki's mine."

Dodd shrugged. "You should have thought of that sooner, Jaime. You've got to ride with the times."

"Nobody's going to put me off Loki," Morgan said stubbornly. "Nobody!"

"Be sensible, Jaime. There's always plenty of room—out there." He looked up; so did Morgan. "Out there" was always up, no matter how far toward the Galaxy's rim you stood. "One of the big outfits would finance you if you needed grubstaking—"

"And they'd tie me hand and foot, too," Morgan said. "When I open up a new world I do it my way, not the way of Inter-Power or Sun-Atomic. When I take a walk down Paradise Street, I go under my own power."

They were both silent for an instant, thinking of that trackless path among the stars, that road exactly as wide and exactly as narrow as a ship's bow, pointing wherever a ship's bow points and always bordered by the stars. The course on the charts is mapped by decimals and degrees, but all courses run along Paradise Street.

The explorers and the drifters and the spacehands are misfits mostly, and, therefore, men of imagination.

The contrast between the rigid functionalism inside a spaceship and the immeasurable glories outside is too great not to have a name. So whenever you stand in a ship's control room and look out into the bottomless dark where the blinding planets turn and the stars swim motionless in space, you are taking a walk down Paradise Street.

"There'll always be jackpot planets left, Jaime," Dodd said, making his voice persuasive.

"I won't go," Morgan told him.

"What are your plans, Jaime?" Dodd asked ironically. "Have you looked in your pockets?"

Morgan paused halfway through a gesture to search his rumpled clothing, his inquiring gaze on Dodd. "I didn't—" he began.

"Oh yes you did. Everything. Even your guns are gone now. Those gambling joints don't let a man get away as long as there's anything negotiable on him. Go on, search your pockets if you don't believe me. You're broke, Jaime."

"Not the whole ten thousand credits!" Morgan said with anguish, beginning frantically to turn his jacket inside out.

"Ten thousand credits?" Dodd echoed. "Is that all Valley gave you? For forty gallons of the drug?"

"Drug?" Morgan said abstractedly, still searching. "What drug? I sold him *sehft*."

"*Sehft's* a drug. Didn't you know?"

Morgan lifted a blank gaze.

"It's been kept quiet, of course," Dodd went on. "But I thought you knew. A narcotic can be synthesized from the natural raw *sehft*. Not from the synthetic stuff. It hasn't got the proteins."

Morgan looked up in bewilderment that slowly gave way to a dawning fury. "Then the stuff's worth . . . why, it'll be priceless!" he said. "If the *sehft*-rats are exterminated, what I sold Valley's worth a hundred times the penny-ante price he paid me!"

"That's what you get when you play around with city boys, Jaime," Dodd told him unsympathetically.

Morgan stared straight ahead of him at the discolored curtains and the moted sun. A vast and boiling rage was beginning to bubble up inside him. All down the line, Shining Valley had outwitted him, then. And Dodd stepped in to take over where the Venusian left off. And Warburg sat back smugly to watch while the Trade Control put a roof over Loki and Loki's rightful dwellers. He thought for one weak and flashing moment, with a sort of bitter envy, of young Dain safe on Chocolate Hill under his Martian Circle, and of Wild Bill dead before Loki's downfall, and of Shem'li-hhan with no more problems to deal with. They'd been the lucky ones, after all.

But Morgan was no defeatist at heart. He'd think of something. Jaime Morgan would last forever, and Loki was still his world and nobody else's. He choked the fury down and turned to face Dodd.

"I can take care of myself," he said. "Kick my boot over this way, Rufe."

The major scuffled with one foot in the dust. Morgan swung his feet over the bunk's edge and stooped, grunting, to snap the clasps of his boots.

"You're wasting your time, Rufe," he said, looking up under his brows. "Why don't you get on out there and round up a few of the local hoods, if you feel so law-abiding? They're the real criminals, not me."

Dodd's face tightened. "I obey orders."

"From what I hear, the settlers are going to take things into their own hands one of these fine days," he said. "Oh well, forget it." He stretched for the farthest buckles, grunting. Then he slanted a grin up at the watching major.

"What do you hear from the cockeyed giant, Rufe?"

Dodd's stern mouth relaxed slightly. The smile was reluctant, but it came. Encouraged, Morgan made his voice warm and went on, still struggling laboriously with the boot.

"I can't reach the last snaps, Rufe," he said. "Remember that crease from a spear I got out on Llap, when we stood off the Red-feet together for three days? Makes it hard for me to bend this far. Guess you don't outgrow these things once you start getting old. Damned if you're not starting to show gray yourself, Rufe."

"Maybe you aren't," Dodd said.

"But your hands are shaky, Jaime."

"If you'd had a night like mine," Morgan grinned, "you'd be resonating ultrasonics. I'll get over it. I—" He grunted piteously, stretching in vain for the last clasp.

"I'll get it," Dodd said, and stooped.

"Thanks," Morgan said, watching his moment. When Dodd's jaw was within range Morgan narrowed his eyes, braced himself in the bunk, and let the heavy boot fly forward and upward with all his lean weight behind it.

The kick caught Dodd on the side of the jaw and lifted him a good six inches before he shot backward and struck the dusty floor, his head making a hollow thump on the rubberized plastic.

Morgan followed his foot without a second's delay. Dodd had no more than hit the dust before Morgan's knees thudded upon the floor on each side of him and Morgan's hands slapped down hard upon his throat.

It wasn't necessary. Dodd lay motionless.

"Sorry, Rufe," Morgan grinned. "Hope I didn't—" His hands explored the unconscious skull before him. "Nope, you're all right. Now I'll just borrow your gun, Rufe, and we'll see about a little unfinished business here in town. Deport me, eh? Let me give you a little good advice, Rufe. Never underestimate an old friend."

He got up, grinning tightly, slipping the stolen gun in his belt.

The hangover thudded inside his



head, but he showed no outward sign of it. Moving cautiously, light and easy, he slid out of town, through the new orchards toward the woods about a mile away. Wild woods, circling down upon Ancibel Settlement in ranks unbroken for countless miles upon miles far over the curve of Loki planet.

There was a fresh-water brook coming down out of the foothills in the edge of the woods. Morgan stripped and bathed in the icy water until his head cleared and he began to feel better. Afterward he went back toward Ancibel, the gun heavy in his shirt, looking for a man named Shining Valley.

"I was waiting for you," Shining Valley said dreamily, blinking up through a rising mist of bubbles that flowed in a slow fountain from the

pewter mug in his hand. He leaned his elbows on the table, moving the mug from side to side and swaying his head to and fro with it in a smooth, reptilian motion. The spray of rising bubbles bent like an airy tree in the wind. "I was waiting," he said again, only this time he sang it. All Venusians sing among themselves, but not to outsiders unless they are euphoric.

Morgan's nostrils stung with the sharp, almost painfully clear aroma of the high-C *pouilla* Valley was inhaling. He knew better than to rely on the hope that the man was drunk.

Valley made a gesture in the air, and again out of the ceiling a descending swoop and rustle sounded and a curtain closed the two of them in, this time a circle of it around the table toward the rear of the Feather Road.

Valley's opaque stare was candid and curiously limpid through the rising spray. "Now you will work with us," he sang.

"Now I'll take the rest of my credits," Morgan corrected him.

Valley's fingers caressed the pewter mug with a faintly unpleasant tangling motion.

"I paid you ten thousand. *Skalla*."

"That was a first installment. I want the rest."

"I told you—"

Morgan inhaled, wrinkling his nose. "You told me a fish story. The stuff I sold you will be priceless as soon as Trade Control clears out the *sehft*-rats. There isn't any planet with an H-K spectra matter cloud. You'll process the *sehft* for narcotics and ask your own price. Get it, too. I want mine. Will you pay up now, or shall I blow your head off?"

Valley made the familiar sea-wave sound in his throat meditatively. Suddenly he bent his head and nuzzled his face into the spray of pinpoint bubbles.

"Give me the ten thousand back," he said, "and I'll return your *sehft*. Things have been happening. Forty gallons isn't worth running a risk for, and forty's all I have."

"You're lying," Morgan told him flatly.

Shining Valley smiled through the spray. "No. I had more, yesterday. Much more. I've been collecting it for weeks now, from everyone I could buy from. But last night Major Dodd confiscated the lot. Now I have nothing but the forty gallons

you sold me. You want it back?"

Morgan struck fiercely at the empty air in front of him, as if he brushed away invisible gnats. He hated this quicksand shifting underfoot. What was true? What was false? What devious double-dealing lay behind the Venusian's dreamy smile? He wasn't used to this kind of byplay. There was always one way to end it, of course. He slid his hand inside his shirt and closed it on Dodd's gun.

"I'll make you an offer, though," Shining Valley said.

Morgan tightened a little in every muscle. Here it came, he thought. They'd been maneuvering him toward some untenable spot he could yet only dimly glimpse. In a moment or two, perhaps he'd know.

"Go on," he said.

"You're in a bad position, Jaime Morgan," the man from Venus said softly. "Very bad indeed. You drunkenly squandered your money away and now you can't leave Ancibel Key. No one will sell you a liter of fuel until you pay up your old debts. I know how frontiersmen work, always one trip behind themselves, operating on credit, using this year's cargo to pay last year's bills. Without the price of the *sehft* you can't re-establish your credit. Am I right?"

Morgan bent forward, resting his chin on his hand, his elbow on the table. In this position his shirt front was covered, and he slipped Dodd's gun out and laid it on his knee, muz-

zle facing Shining Valley's middle under the table.

"Go on," was all he said.

"You'll be deported from Loki planet as soon as the Jetborne catch up with you," Valley went on in the same dreamy singsong. "You want to stay. But you can't stay unless you co-operate with me."

"I can work out my own problems," Morgan said. "Pay me what you owe and forget about me."

"That deal is finished. I have said *skalla* and it can't be reopened. If you offered me a ton of *sehft* now, I wouldn't give you a link for it. You have only one thing for sale I'll buy from you, Morgan—your co-operation. I'll pay you forty thousand credits if you'll do a little job for us."

Morgan moved the gun muzzle forward on his knee a little, felt the trigger with a sensitive forefinger.

"What's the job?" he asked.

"Ah." Shining Valley smiled mistily through the spray. "That you must tell *me*. I can only give you my problem and hope you have the answer—because you know Loki planet so well." He made a disagreeably fingery gesture toward the far end of town. "Out there stand the big ships, pointing into space," he said. "One of them is ours. We are very well organized here at Ancibel Key. Much money is behind us. But Major Dodd has grounded all the ships in port. Also, he has confiscated our treasure. What we wish to do is regain the *sehft* he stole from us, load it aboard our ship and send it off.

How can we do this, Jaime Morgan?"

"You've got some idea," Morgan said impassively. "Go on."

Valley shrugged. "An idea only. Perhaps it will work. Are you afraid of the wild Harvesters, Morgan?"

"Sure I am," Morgan said. "Be a fool not to be."

"No, no, I mean, could you handle a herd of them? Guide such a herd, perhaps?"

Morgan squinted at him, letting his finger slip off the trigger a little. "You crazy?" he demanded.

"I had heard it can be done. Perhaps some frontiersman more expert than yourself—"

"It can be done, all right," Morgan interrupted. "But why should it? Where would it get you?"

"To the ship, with my cargo, if we're lucky," Valley said. "I would like you to stampede such a herd straight through Ancibel Settlement. What would happen then?"

"Blue ruin," Morgan said. "Half the population wiped out and every building in their way trampled flat. That what you want?"

Shining Valley shrugged.

"That doesn't concern me. What I want is to draw the Jetborne and the settlers away from the building where the *sehft* has been stored. I want enough confusion in Ancibel to clear the spacefield. I think what you describe would do the job nicely, don't you?"

"Yes," Morgan said dubiously. "Maybe it would."

"So you will?"

"There must be easier ways," Morgan said.

"How? Fire the town? It won't burn. Only the church and a few of the older stores are made of wood. Of course some other way might be devised, in time, but I have no time to waste. I thought of the Harvesters because one of my men reports a herd of them grazing down a valley only a few miles from here."

"The town must be protected automatically somehow," Morgan objected. "Harvesters are dangerous. There must be—"

"I believe some sort of devices have been set up. Seismographic pickups catch the vibrations of their approach and cut in automatic noise-making devices. Harvesters I believe are very sensitive to sound? Very well. They won't react to these, because the noisemakers won't operate. My men will see to that, if you can take care of guiding the herd."

"It's too dangerous," Morgan said.

"Nobody earns forty thousand credits easily, my friend. Will you do it, or must I search for a man with less timidity for the job?"

"There isn't a man on Loki any less scared of Harvesters than I am," Morgan said practically. "I'm thinking of afterward. Do you know the only way a herd of stampeding Harvesters can be guided? Somebody's got to ride the lead bull. All right, I could do it. But I'd be pretty conspicuous up there, wouldn't I? And a lot of the settlers are bound to get hurt."

"Do you owe them anything, my friend?"

"Not a thing. I hate the sight of 'em. I'd like to throw the lot of 'em clear off Loki planet, and you and your crowd right after. Every man, woman and child in Ancibel Settlement can die for all I care, the way I feel now. But I'm not going to run my neck in a noose killing 'em. I'll be up there in plain sight, and there's bound to be survivors. If I earn that forty thousand credits, Valley, I want to live to enjoy it. I don't want a crowd of vigilantes stringing me up to a tree the minute I drop off the Harvester bull. So that's out."

"Perhaps," Valley sighed. "Perhaps. A pity, isn't it? I have the forty thousand right here."

He groped inside the sleeve of his fawn-colored robe and laid a packet of credit notes on the table. It was thick and crisp, smelling of the mint.

"This is yours," he said. "For the taking. If you earn it. Isn't it worth a little risk, Jaime Morgan?"

"Maybe," Morgan said. He gazed hungrily at the money. He thought of his ship lying portbound beyond Ancibel, fuelless and immobile—like himself. What did he owe the settlers, anyhow? Had they spared *him*, when they had the chance? Like most men who travel the lonely worlds, Morgan had great respect for life. He killed only by necessity, and only as much as he had to.

Still—with this much money he could get clear away. Loki was a big world, after all. He moved his

finger-tip caressingly on the trigger of the hidden gun.

Suddenly he grinned and his right arm moved with startling speed. The table jerked, the shining tree of spray bowed sidewise between Valley and him. When it righted again the muzzle of Morgan's gun rested on the table edge and its unwinking eye was fixed steady upon the Venusian. Valley met that round black stare, going a little cross-eyed through the bubbles. He lifted a flat, waiting gaze to Morgan.

"Well?" he said.

"I'll take the money. Now."

Valley held the flat stare for an interminable moment. Then slowly he pushed the packet of credits across the table, not shifting his eyes from Morgan's. Morgan did not look down, but his free hand found and pocketed the sheaf with a sure gesture.

The Venusian made a very small motion. Morgan gave him no time to complete it, whatever it was.

"Don't!" he advised sharply.

"You can't get away with this, Morgan," the man from Venus said. "My boys will—"

"No they won't." Morgan sounded confident. "Why should they? I'm going to earn the money."

Valley's pale brows rose. "How?"

"I'll stampede the Harvesters, all right. But not through the town. That's murder, and I won't stick my neck out that far for anybody. The Jethorne won't tolerate murder."

"What's your plan, then?"

"You know that stretch of orchards east of town? And the farmland between them and Ancibel? I could lead the Harvesters through that valley. Trample their stinking crops right back into the ground. Break their fruit trees down. Ruin a good half-year's work. It might even drive 'em clear off Loki." Morgan smacked his lips. "That ought to do the trick."

Shining Valley frowned. "I'm not so sure."

"Did you ever hear a herd of Harvesters stampeding?" Morgan demanded. "The ground shakes like a quake. Windows break for half a mile around. When the settlers feel and hear and see what's happening, they'll swarm out like wasps out of a hive. Give you all the free time you need in Ancibel. Besides, that's what I'm going to do. Nothing else. You want me to earn this money or just take it and go away?"

Shining Valley looked down at his long, boneless fingers clasping the pewter mug. He moved them intricately over and under one another, as if he were weaving a complex Venusian finger-sentence of advice to himself. After a moment he nodded and looked up, his eyes veiled by the rising spray.

"Very well," he said. "I can count on you?"

Morgan stood up, pushed back his chair.

"Sure I'll do it," he said. "My way, not yours."

Shining Valley nuzzled again among the rising bubbles. He made

in his throat the noise of a Venusian sea lapping a pebbled shore.

"Your way, not mine," he agreed in the smoothest of smooth voices.

Harvesters are mindless angels of destruction. They look like kerubs, the magnificent bearded kerubs of Assyrian legend, bull-bodied, tremendous, with great lion-faces and thick, streaming Assyrian beards. Bosses of sound-sensitive antennae stud their brows and they have hair-trigger neural reactions as comprehensive as radar-sonar. Any variation from the rhythmic patterns of normality send them into terrible, annihilating flight.

A good explorer never has a dangerous adventure, Morgan remembered the old saying, and qualified it: *barring the unexpected.* New worlds have a way of being unexpected. The first water he drank on Loki registered pure by every chemical test, but gave him a fortnight's fever because of a new virus that science was able to classify—later, after he had discovered it. A virus that went through porcelain filters, withstood boiling and resisted every standard purifying chemical was so far outside the normal frame of reference that extrapolation hadn't helped—not unless you extrapolated to infinity, and then you'd never dare try anything new.

Like the Harvesters. There was a way to handle them. Not many men knew the way, and fewer still had the split-second synaptic reactions that made it possible.

Morgan, waiting perfectly motionless in his ambush, scarcely breathed. He was almost as immobile as a stone. Not quite; that would have been a mistake, for he wasn't a stone, and without natural hereditary camouflage he couldn't hope to imitate immobility. But he could perceive, with all his senses, the natural rhythm and pattern of the dark forest around him, the stars overhead, the sleeping rhythms and the waking rhythms of Loki's nighttime pattern, and slowly, gradually, sink into an absolute, dynamic emptiness in perfect tune with the world around him.

He emptied his mind. He was not even waiting. The ultrasonic gun was planted and due to go off at the right moment. He had charted the position of the grazing Harvester herd, the wind-drift, the rhythms of movement that flowed through and above this forest. The herd dozed, grazed, shifted gently down the dark forested valley toward him. Now they were motionless, drowsing perhaps under the stars. Morgan squatted in the humming quiet, letting his fingertips touch the moss and send soft vibrations toward his brain.

Once he stirred, drifting with a little scatter of dry leaves like confetti, toward a spot where the filtered starlight blended better with his own pattern. He had not realized this second spot was better until he caught the rhythm of Loki.

How many worlds he had exchanged this psychic blood-brotherhood with, this beating pulse of plan-

etary life that opened the way for a transfusion between a living world and a living man. All Loki, it seemed to him now, slept and was unaware. Only he crouched here in perfect co-ordination with the turning world. He scarcely needed to glance at the shaded oscilloscope he had rigged to check upon his co-ordination. He knew with a deeper sense than sight how attuned he was. A shaking green line on the face of the oscilloscope translated Loki's night sounds into sight. A second line trembled across it—his own. No man could ever make those two lines completely merge, of course. At least, not while he lived.

Morgan's mind, emptied of circulating memories, let old eidetic ones swim up unbidden. *And wears the turning globe*, he remembered out of some forgotten book. A dead man, clad in the turning world. He wore Loki now, but not as the poet meant. That would come later. Some day, somewhere, on some world whose name he might not even know yet, he would make that last and completest marriage with some turning globe, and then the green lines would tremble and blend.

But now he wore Loki, his world, fought for and earned. He meant to keep it. And he could. There was room. The villages would grow, and the webs of steel spin farther, but there would still be the forests and the mountains. It would be a long, long while before settlers dared explore Deadjet Range, or Great Swamp Valley, or Fever Hills.

The ground shivered. The green line on the oscilloscope wavered into a jagged dance. The Harvesters were moving.

More and more wildly the green line danced. In the moss under his fingertips Morgan felt vibrations grow strong. Scores of mighty hoofs bearing tons of tremendous bodies moved leisurely down the steep canyon valley toward him. He waited. There was no feeling of stress at all.

They were not yet in sight when the sense of movement all around him first began. Leaves rustled, tree trunks vibrated. The herd was coming near. Morgan relaxed utterly, letting the pulse of Loki carry him on its restless current.

High up among the leaves, seen dimly by starlight at a sharp angle from his crouch on the ground, Morgan was aware of a tremble of vines, a crackle and tearing, and suddenly a great, black, bearded face wreathed in torn leaves thrust forward. Vines snapped over a mighty chest and the herd leader burst majestically into sight, black and sleek and shining with blue highlights, his tight-curled mane merging with his curly beard. The antennae writhed slowly and restlessly above his round eyes, warily blinking. The breath snorted and souged in his nostrils. The ground shook when he set his mighty hoofs upon it.

Morgan did not move, but every muscle inside him drew taut as springs, and the internal balances of his wiry body shifted for a leap. He

waited his moment, and then his right hand closed hard upon the firing device that linked him with the hidden gun.

The gun was a Barker, set for its highest decibel-count of sheer noise. Morgan heard the first forerunning sound-wave of that tremendous mechanical roar, and opened his own mouth wide and shouted as loud as he could. His voice would be drowned in the noisy blast of the Barker, but he was not concerned with that. He had to balance the vibrations on both sides of his eardrums; the shout saved him from being deafened.

Upon the Harvesters the full impact of the roar fell shatteringly. All through the forest one concerted tremble and gather of mighty muscles seemed to ripple as the herd drew itself in for the spring into full stampede. Morgan had timed himself to a split second. His reactions would have to be exactly right.

It took just two fifths of a second for the Harvesters' sense-organs to drop to maximum loss of sensitivity after exposure. Very briefly indeed, the herd was deaf. It would not react with its normal supersensitivity. But in that two fifths of a second pure reflex would hurl them into headlong flight.

In that fraction of a second, Morgan sprang.

It was a tricky stunt. He timed himself to strike the bulge of the herd-leader's off foreleg with his knee in the instant before the bull surged forward. His hands seized

two fists-full of curly mane and he clawed himself desperately upward in the same moment that the foreleg drove backward like a piston, great muscles bunching to hurl Morgan upward within reach of the great black column of the neck.

He was ready and waiting when the lift came. He flung his knee over the sleek withers and fell forward flat and hard against the neck, both hands darting forward in a quick grab that had to be absolutely precise, to gather in each fist the bases of the thick antennae-clumps sprouting like horns from their twin bosses above the animal's eyes.

He felt the cool, smooth sheaf of tendrils against his left palm, and closed his fist hard. His right hand groped—slipped—

Missed.

Missed!

It couldn't be happening. He had never missed before. He was as sure as the stars in their turning. His own body was a mechanism as faithful as the rising of the sun over Loki planet. Jaime Morgan would go on forever. How could age weaken him? It must never happen—

But he missed the right-hand boss. His own momentum carried him helplessly forward, and the fatal toss of the bull's head hurled him on over the side of the gigantic neck. He felt the strong, hard column of its throat slide by under him. He felt the sickening vibrations of the herd's thousand hoofs striking the ground

in earthquaking unison. He saw the forest floor sweep by with blurring speed as he slid sidewise toward it. He remembered how a man looked after a Harvester herd had passed over him—

As he shook like a falling leaf that slid sidewise through air, his mind closed and gripped and clung furiously to one single thing—his own name.

Jaime Morgan, his mind cried frantically, tightening on that awareness and that identity which looked so close to forsaking him forever. The ground shuddered with rhythmic thunder, the Harvester's great neck pumped and tossed, the moss of the forest floor blurred by under his straining eyes.

Mixed up with Jaime Morgan was the memory of Shem'li-hhan. *He got old. He got careless. Just once he was too slow, and the stag bison got him.* Was this how it had looked and felt to Shem'li-hhan, in the instant before death? Morgan had never failed before—would he have a chance to fail again, ever again in this life?

Oh yes, he would.

Afterward, trying to remember exactly how he had done it, what crazy contortion had locked him into place on the bull's neck again, he found he could not remember. One instant he was swinging almost free, sliding down toward the shaking ground. The next, his knees were locked hard on both sides of that great muscular column again, and his hands frozen in the familiar grip

on both the antennae-bosses, gripping and deadening the proprioceptors of the bull.

Nobody else could have saved himself, he thought, dizzy with fright and triumph. *Nobody but me.* But the words wouldn't stop there. *I missed, though. I missed. Like Shem'li-hhan, a man gets old—*

He looked back. Behind him the Harvester herd came pouring in the strong starlight, one black, tossing waterfall of annihilation. They were magnificent, mindless angels of destruction, a host of heaven thundering down upon Ancibel Key. Tightening his fists, Morgan swung the herd leader imperceptibly toward the right side in a wide arc whose end would be the fields outside Ancibel. The leader obeyed—

Suddenly Morgan found himself roaring with laughter. Tears burned in his eyes from the wind of their passage and the pressures of his mirth. He didn't know why he laughed. He only knew that some deep, ancient fear inside him relaxed and quieted as the breath beat in his throat. Old? Not yet—not yet! Somewhere, some day—but not yet!

Lying close along the tremendous, pumping neck, his hands locked on the antennae bosses and his knees tireless in their grip upon the Harvester's withers, Morgan led the herd. Exultation boiled up in him like strong liquor, a wild intoxication of the mind. The power of the beast he rode burned through him and the rhythmic thunder of the



running herd made his blood beat with the same strong rhythm. It was Loki planet itself which he was turning against the sleeping settlers, Loki rising in its anger to cast the intruders off.

Leaves whipped his face. The chill rush of wind made his eyes water. The hot, strong smell of the running bull stung in his nostrils. Then the leaves thinned suddenly and the thunder of the running beasts behind him changed in its sound as the forest fell away and open country lay before them. Morgan tightened his right hand on the bull's antennae-boss. Its perceptions dulled by the grip, it swung toward the left, toward the hillside of vines and orchards and the broad tilled fields above the town. Swinging after them came the herd, and the ground roared and trembled under their

pounding hoofs.

The stars seemed to tremble, too. In the black sky nameless constellations shivered, new, foreshortened images seen from the far edge of the Galaxy and unnamed until men like Morgan came to watch by night and call them by familiar titles. He saw the Jetship sprawling its long oval above the town and the stag-bison hurtling without motion toward the horizon. All the stars were watching along Paradise Street.

But the settlement slept. A few lights burned where saloons and gambling houses clustered at the far side of town; and out beyond, over the shielding hills, five spaceships towered against the stars. Lights from below shimmered upon their tapered sides, and stars shimmered upon their peaks. The Jetborne would be camped out there, guard-

ing the spaceport. Morgan grinned savagely. Rufe Dodd was in for a surprise.

He leaned forward upon the tremendous neck, looking for the network of guarding wires which would warn the villagers if intruders came too close. He saw cut ends glitter and a tangle of torn netting piled aside, and he gripped the bosses harder, swinging the herd through the gap.

Now the trees loomed before them, heavy-laden with forming fruit. The orderly rows stretched downhill in ranks like soldiers. The lead bull tossed its bearded head as the strong scent of man rose before it like invisible fountains in the air. But the pressure of the herd behind it was strong, and it thundered forward among the trees.

Great shoulders cracked among the branches. The orchard's resistance seemed to madden the Harvesters. They plunged and snorted among the trees, roaring, pawing, crashing down through laden boughs. In an irresistible surging wedge driven by sheer momentum, they poured forward.

Morgan leaned forward upon the great maned neck and howled above the crashing of the herd.

"Smash 'em down!" he roared to his unhearing mount. "Smash 'em under! Flatten the last rotten, stinking fruit-tree on Loki!" He loosed his grip a little on the antennae-bosses and screamed a wild Indian falsetto to madden the bull to its utmost, as if the few weak decibels of

any human voice could be heard above the bellowing and the thunder of the herd.

He was half wild himself with the drunkenness of destruction and every new row of trees that went crashing under fanned him to new heights of furious joy. It was intoxicating to think of the long labors and the endless months of effort that had gone into the planting of this orchard. He drank in the scent of crushed fruit and ruined trees, and it was like the scent of strong whiskey in his nostrils. A man could be drunk on the very thought of the destruction he was wreaking now upon his enemies.

He howled louder and drummed with his knees upon the mighty, oblivious neck.

"Smash 'em down, you juggernauts! Roll 'em under!"

Ahead of him, beyond the ruined orchards, lay the fields. Clinging tight to his terrible mount, Morgan began to measure his course. Eventually he would have to dismount. That was going to be tricky.

He couldn't go down. Not into that thundering charge. He would have to swing off the lead bull's back, and that meant something he could swing to, something higher than the Harvester.

The herd crashed through the last line of trees and the cornfields stretched before them, silvery under the stars. Shouting, Morgan lay forward on the great neck and urged the Harvesters on. Soft ground

churned under their hoofs and they plowed forward floundering and roaring until their gait adjusted to this new element of destruction. Morgan yelled with a drunken joy. He was the mightiest man alive. He wielded the thunderbolts like Jove himself, hurling his great herd down the fields.

To his right, in the town parallel with the galloping Harvesters, he saw lights begin to go on, heard shouts of alarm and presently the rhythmic clang of a bell swinging wildly in the church steeple. He roared with furious laughter. Drive him off Loki, would they? Let them try! He bellowed a wordless challenge to the clanging bell.

Far ahead of him he saw a row of *serith* trees at the end of the fields. He would swing off upon one of those strong curved boughs when he reached them, for they marked the end of his journey. When the herd passed those trees, his job would be finished.

He looked back, clenching his hands hard upon the bosses he held. After him thundered the Harvesters, a terrifying melee of tossing heads, streaming beards, rippling, sleek flanks in the strong starlight. He could see the ruined orchards they had charged through, and behind them now a widening stretch of ruined fields, every blade and grain trampled into the carbon-blackened soil in a swath of total destruction. He laughed exultantly. Plow up Loki planet, would they? Plant his wild and lonely valleys with corn?

Tonight he was beating those alien crops back again into the soil they had invaded. The very planet shuddered under the thunder of the charge he led. He knew how the centaurs must have felt, who were half gods—

There was a furtive motion back there along the edges of the broken trees. He turned his head and saw more of it bordering the fields parallel with his course. He was leading his herd along the outskirts of the town now, and the row of *serith* trees swept closer and closer. He had no time left to concern himself with that furtive motion, because the end of the ride was almost upon him, but he didn't like it. He didn't understand it. Something was afoot he had not allowed for—

The *serith* trees, distinct in the starlight, were rushing toward him, expanding with a startling illusion of rapid growth as the herd swept nearer. He gathered his muscles taut, gauged his leap—

Between him and the trees lightning and thunder exploded with blinding suddenness. Dazed, half-stunned by it, Morgan could only clutch the antennae-bosses in a paralyzing grip and cling like death itself to the plunging neck he rode.

Under him he felt the whole enormous bulk of the bull shudder in a violent convulsion, shudder and leap and seem to turn in midair. When it struck the ground again the whole valley must have shaken with the impact. Morgan gripped hard with knees and hands, dulling the bull's

perceptions as much as he could, but not enough, not enough.

The world was reeling around him, standing up edgewise upon the horizon like the world below a turning plane. It whirled upon the pivot of the Harvester's drumming hoofs, and the herd whirled with it. There was more stunning, tremendous noise, but behind them now, bursting out in crazy roarings along the edge of the trampled fields.

Barkers. Ultrasonic guns bellowing at full sonic range.

So that was it, Morgan thought, shaking his dazed head. There hadn't been lightning in the thunder at all. It was merely his shocked senses that filled the lightning in. Gripping the lead bull hard, he looked back and saw what he had half-known, all along—a row of lemon-colored heads edging the field, long pale robes flickering in the starlight, dull metal shining as the Barkers roared.

They were driving the herd, and Morgan with it. But where?

He knew before he turned. The whole simple plan was perfectly clear to him; so clear he realized what a fool he must have been not to see it all along.

Low houses flashed by the Harvester's shoulders. Morgan turned in time to see the sprawling buildings of Ancibel Key fanning out on both sides as he led the herd between them straight toward the main street of Ancibel Key.

Crazily he roared at them to halt. But his own voice was drowned in

his throat by the bellow of the Barkers to their rear and the deafening thunder of hoofbeats as Harvesters and rider together swept forward into Ancibel Key in one terrible, annihilating tide.

The murderous rage of utter impotence rose strangling in Morgan's throat, rage with everything that existed. He hated the bull beneath him, and the Harvester herd they led. He hated the running settlers he could glimpse between buildings ahead. He hated the clangor of the churchbell shouting out its alarm. His mind ached with a fury of hatred for the man from Venus who had tricked him into this, and for all the men who lined the fields outside the town, lashing on the herd with roaring Barkers.

But most of all he hated Jaime Morgan, the blundering fool who rode headlong to his own destruction, and Ancibel Key's.

In the crash and crackle of ruined buildings the Harvester herd poured through Ancibel. Dust swirled blindingly as the plastic walls buckled in and the arched roofs thundered down. It was a nightmare of disaster in the dark, with rainbows of rising dust around every streetlight, so that Morgan could scarcely see or breathe.

He had incoherent glimpses of running men, shouting and beckoning to one another and vanishing again into darkness. Directly before him, in a rift in the dust and the dark, he saw a settler drop to one

knee, throw a rifle to his shoulder, and squint upward at the man who rode the leading bull—

Something like a red-hot wire laid itself along Morgan's shoulder. He swung himself sidewise upon the gigantic neck he rode, and the kneeling man and the alley he knelt in swept backward and away like a fragment in a dream.

When Morgan righted himself again, his knees were trembling. His grip on the antennae-bosses felt less sure. A new terror flooded through him. He could not cling to this desperately precarious perch forever, and he knew it. But his chance of swinging off the bull lay far behind, and distance lengthened between with every stride of the Harvesters.

He remembered Shem'li-hhan again.

And still the dust swirled and the buildings along both sides of the ruined street crackled and crashed anew before the shoulders of the stampeding herd. Men's shouts and the thin, high screams of women, and deep-throated clangor of the churchbell echoed above the planet-shaking thunder of drumming hoofs.

Harvesters had been known to run for days, once the hypnotic compulsion of a stampede gripped them. They might run until they dropped. Long before that happened, Morgan's grip would slack upon the beast he rode. Thinking of it, he felt his sinews shiver anew with the effort at holding firm.

He had to swing off somehow, and he had to do it soon.

That was nonsense, of course. What was the use of prolonging by a few minutes the death that was bound to take him when the infuriated settlers reached the man who was flattening their town? Too many must have recognized him already, up here in the rider's seat upon Juggernaut. How many men and women had gone down already under this rolling avalanche, and how many lay smashed under the ruined houses?

He took cold comfort from the thought that it was mostly business houses and gambling dens along this main street, no residence. Some had died already. Some must have died. And if one life was lost, the Jetborne would hang him whether the settlers did or not.

Stunned with the noise and the vibration that pounded through him, dazed with his own anger and dismay, blinded with the swirling dust, he looked up at last and saw rising before him above the dust and the film of reflecting lights the five tall shining towers of spaceships at the port ahead. He was near enough now to see the ladder dangling from the nearest, and a flicker of faint hope stirred anew in his mind.

The ships were one manmade thing that could withstand even a charge of maddened Harvesters. He even grinned faintly, thinking how the Jetborne would scurry in ignominious flight when this tossing avalanche pounded through the field.

The five ships poised like the fingers of a steel-gloved hand above the town, as if some gigantic figure

leaned with one negligent hand upon Loki, watching a small human drama play itself out to its insignificant climax.

Up, up the hill beyond the town the Harvester herd went thundering. Now the last buildings had fallen behind, and the shouts grew thin and the lights of Ancibel fell away. Up and over the hill-crest swept Morgan's mount. He drew himself together for a final desperate effort as the ground dropped away again and the galloping bull plunged forward down the slope toward the ships.

Small figures in uniform drew up at the edge of the field, firelight flashing on leveled guns. Ultrasonics whined into the herd briefly, but it was only a gesture and Morgan knew it as well as the others did. The tremendous vitality of the Harvesters, plus their terrible momentum, made any hope of killing the beasts preposterous. Even dying, the herd would still overwhelm the Jetborne at the edge of the field.

An invisible broom seemed to catch them as the foremost bulls plowed forward. Still firing futilely, they scattered and vanished.

Now the tall ships swept toward Morgan with nightmare speed. He saw starlight glimmer on their lifted heads and firelight on the long, smooth swelling of their flanks. He saw the rope-ladder dangling from the nearest, and as the herd surged onward, dividing among the gigantic columns of steel and closing again

like black water around their fins, he drew himself together, waited his moment—

And leaped.

In midair for one timeless instant his faith shook. He could not be *sure* he would make it. Shemli-hhan's face swam before him, every feature vivid in his mind's eye. Then his hands closed on the rope and its hard burning as it jerked through his fingers dispelled the doubt and the illusion instantly.

He held on with all his strength, feeling his arms drag at the sockets of his shoulders. At the same moment he let go with his gripping knees and felt the mighty neck of the Harvester drop away below him, felt the thunder of the herd shake the very air as he hung swaying and turning above that trampling torrent. -

The weakness of exhaustion was waiting to pour like water along his muscles the instant he let them go slack. He didn't dare relax. He locked both hands on the rope, pawed the air with his feet, found a rung at last and hung there blind and deaf and shivering, while the river of the stampede surged by under him forever. He shut his eyes and held his breath and clung for dear life, never dearer than now in spite of the perils still ahead of him. A long, long lifetime went by.

The thunder was in his head, and would probably never stop again. Time took on a bewildering fluidity. He couldn't tell if it was his own blood pounding in his ears, or the

pounding of the herd. It seemed to him that he heard men shouting very near by, just under him perhaps, in that twenty feet of space separating him from the galloping herd. But how could there be men down there? All initiative seemed to have drained out of him and he could only hang tight to the ropes and wait for his head to clear.

Under his hands the rope jerked violently, almost hurling him loose. Painfully he clung. Again it snapped. This time he opened his eyes and peered down stupidly past his own shoulder.

A ring of pale, upturned faces regarded him from below. It seemed to him that he still heard the Harvesters thundering by, but the beating was in his own ears, for the herd had gone. After it, upon the very heels of the last, the men from Venus came.

Starlight made their sleek, pale hair look white below him. He saw firelight glint upon the heavy carbons they carried, and on the length of rifle barrels.

Then the rope he clung to jerked violently again, and he lost one hand-grip and swung in perilous midair, staring down without comprehension. What was happening? Why?

He saw two of the pale-haired men gripping the ladder's dangling ends. He saw them give the ropes another vicious shake.

They were trying to throw him off the ladder.

Morgan shook his head in a trite and futile effort to get the fog out of

it. Some things, at least, were clear. Shining Valley hadn't lost a moment. In the very wake of the stampede he and his men must have looted the settlement of their treasure. Before Ancibel could pull itself together after this shattering blow, the crew from Venus would be loaded and aspace with their loot. It had all worked with machinelike precision. And they were winding up one unimportant detail now—

The ladder snapped again and the rung Morgan stood on flew out from under his groping feet. He hung by his hands, cursing helplessly. They had cheated him all down the line, then. From the very first, when they swindled him out of his precious cargo, to this moment when they seemed about to cheat him of his very life, they'd had the upper hand. It wasn't enough to drive him through Ancibel and use him as an instrument of outright murder—for he knew men had died under that juggernaut of Harvesters. Now they were going to loot him of the money he had taken and probably shut his mouth forever. Bitterly he remembered Warburg's warning. It had been true, of course. Jaime Morgan was no match for these wily and devious men.

His hands on the rope went numb. He swung dizzily. He couldn't let go to reach his gun. It took both hands to cling. Suddenly he knew without any doubt that he was old. Civilization had been too much for Jaime Morgan.

The rope jerked under his grip

again and his failing hands let go. For a long moment he hurtled outward through dark air. The stars turned remotely above him, Sirius a diamond glitter in the Jet-Ship constellation and the stag-bison picked out in white fire upon infinity.

The ground was a good twenty feet down. He struck it hard.

He knew how to fall, of course. He'd taken worse falls than this and bounced up again ready for anything. He'd had to learn that. But this time he hit the ground stunningly and lay dazed for an interval he could not gauge at all.

Rough hands rolled him over, tore at his pockets. He felt his gun rasp out of its holster and heard the crackle of credit-notes ripped free.

"Is he dead?" somebody asked in the fluting foreign speech he understood only imperfectly.

Morgan heard his own voice say, "No!" suddenly and harshly. He levered himself to a sitting position with painful effort. He still could hear the thundering echoes in his head, and the spacefield tilted before him. He looked up into a ring of incurious faces. Behind them the hurried activity of loading went on half-heeded. He knew one face.

Shining Valley smiled down at him, pale as paper in the starlight. Morgan glowered savagely, full of fury and entirely without hope. Never before had his mind and his body failed him together in a crisis. If he couldn't outguess an opponent, he could outfight him. Now he was helpless. He swore at Valley useless-

ly in middle-Martian.

"You're a hard man to kill, Jaime Morgan," Shining Valley said. "You've had good luck—until now."

Morgan cursed the man in lilted Venusian, knowing futilely that he was getting the inflections so wrong the phrases were probably innocuous.

Valley smiled. "You helped me to my goal, Morgan. I'll reward you for it. There are dead men back in Ancibel, and you'd swing for that unless I save you." He lifted a boneless hand toward the collar of his robe, where the men of his race carry their thin, straight throwing-knives. His own subtlety made him smile wider. "You shall not hang for murder," he promised.

"You will!" Morgan snarled. "The Jetborne'll get you, Valley. They'll—"

"They'll do nothing," Valley assured him. "They can't." His glance swerved to the hurried loading that went on beyond the ring that circled Morgan. "Thanks to you," he said, "their hands will be tied. We'll load the cargo you helped us get, and ship it because you cleared the field for us. The sale of it will pay our protection on Loki for as long as we choose to stay here. Your Jetborne take their orders from authority like the hirelings they are. This, however, is no concern of yours, my friend. Very little is, any longer." He gave Morgan a sweet, cold smile and touched the knife-hilt.

"Rufe Dodd will get you," Morgan

promised him, hearing his own voice crack with anger that bordered on despair. "Nobody's orders will stop *him* when he finds out what—"

Shining Valley laughed abruptly. "You think not, Morgan? Then wait a moment! Perhaps you'd like a word with Dodd—while you can still speak."

Morgan regarded him fixedly, paying little attention to what the man from Venus said. It made no difference. He was wishing without hope that there was some way he could kill Valley. He formed a shapeless and not very practical plan. In the last moment before the throwing-knife was drawn, he thought he would launch himself at Valley's knees and drag him down within reach.

His own legs might not hold him, and his arms still quivered from the long strain of the ride, but with any luck at all he ought to be able to wreak some dirty work on Valley's smooth face before they killed him. He thought with reminiscent pleasure of the technique of eye-gouging, and his right thumb suddenly twisted in the dust, a small motion that meant nothing to anyone here but himself. He was grinning thinly in anticipation when Valley's shout startled him.

"Major Dodd!" the man from Venus was calling. "Major Dodd, step over here!"

Morgan went rigid on the dusty ground, not daring to turn his head. He remembered the scattering of the

Jetborne before the Harvesters' charge, and knew that Rufe Dodd would not have run far— Relief for an instant made him weak. Then he knew it made no real difference whether Valley killed him with a knife or the Jetborne hanged him for murder. He was technically guilty of it and he had no defense the law would accept. Rufe wouldn't have any choice. But still—

Footsteps made the ground vibrate a little under him. Morgan did not turn, even when a familiar voice spoke just above him.

"Morgan," Rufe said with formality and in anger, "you're under arrest. Lieutenant, have him taken in charge."

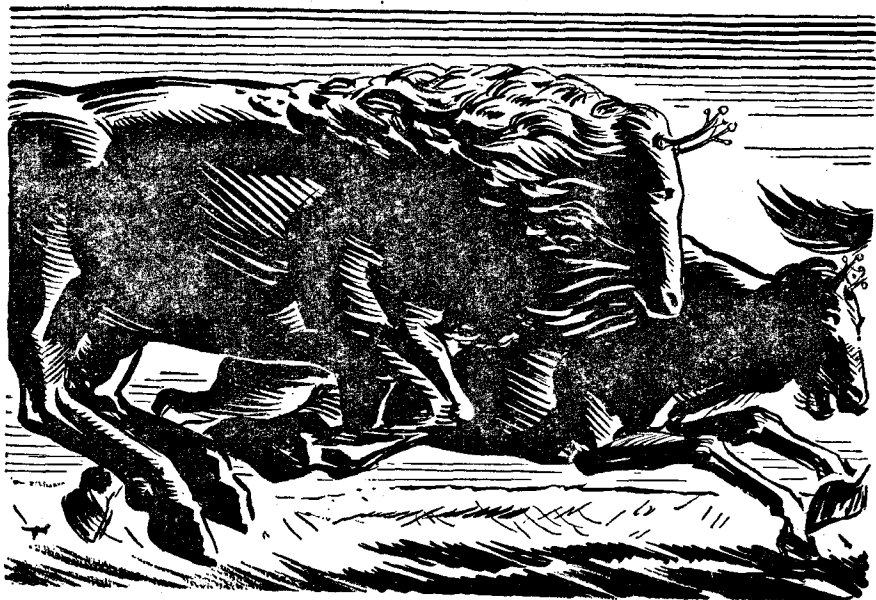
Morgan regarded his own knees steadily, not looking up even when he saw brown-uniformed legs step up on both sides and felt a stranger's firm grip touch his shoulder. At the last moment Shining Valley spoke.

"Just a minute, major! You have no jurisdiction here. Stand back, you men! Morgan belongs to us."

"I'm arresting him for murder," Dodd's crisp voice said. "Lieutenant—"

"You're exceeding your authority, major," Valley interrupted smoothly. "I didn't call you over here to violate orders. You've had your instructions from headquarters, haven't you?"

Dodd's breathing was noisy in the quiet for a moment. Without looking up Morgan knew his jaw was set and his breath whistled through his nostrils. After a long pause, he



spoke.

"I have, Valley."

"And what are they?"

Silence again. After another long pause Dodd said tightly, "I am not to interfere in local matters between you and civilians."

"Very well, then. I called you over chiefly to set Morgan's mind at rest." Valley smiled down at Morgan's set and averted face. "He was under the impression you might . . . ah . . . cause a disturbance if he should die as a result of an armed robbery he committed against me earlier today. He was mistaken, wasn't he, major? You couldn't interfere, could you?"

There was dead silence for a long time.

"You couldn't interfere," Valley

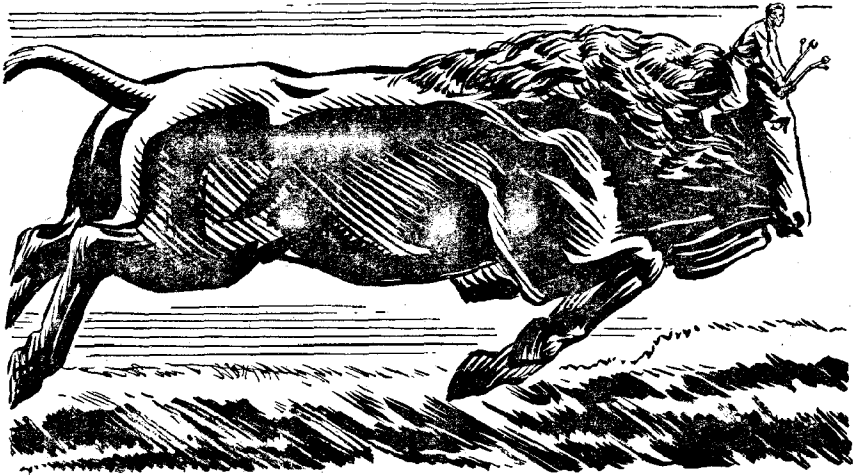
repeated, "between me and civilians, could you, Dodd? Those are your orders? And you never violate orders, do you, major?"

Still Dodd did not speak.

Morgan, without looking up, was the one who finally broke the silence.

"Forget it, Rufe," he said. "Nothing you can do. I asked for it. Just like you to know they tricked me into that Harvester stampede. I never meant to ride 'em through the town. You heard their Barkers, didn't you? That was what—"

"All right, Morgan." Valley's voice was suddenly cold. "I haven't much time to waste here. Major, you can go now. This is a matter between me and the civilian population. You've had your orders." He lifted a tentative hand toward his



knife-hilt again. Morgan gathered himself taut, one palm flat on the ground for the leap. His thumb made a small, anticipatory circle in the dust.

"Get out, Rufe," he said, not looking up. "Go on—git!"

"Be quiet, Morgan," Shining Valley said. "I give the orders on Loki now. Dodd, take your men and go." He smiled. "You might prepare to leave Loki while you're about it," he added. "Your orders will come through from headquarters as soon as this shipment gets there. Money in the right places gives very persuasive advice, major, and this is heading for the rightest possible place. In the meantime you may as well get used to taking my orders. Get out, Dodd. Get out of my sight."

Still Rufus Dodd did not speak or move. It struck Morgan suddenly how strange that was. Not like Rufe Dodd. Was something funny up? He was almost impelled to turn and look, though he had no wish to meet Rufe's eyes. He was not forgetting that he'd kicked Rufe in the face the last time they met, and he was perfectly content to look at the ground now. Rufe wouldn't have taken that too kindly.

But something about Rufe's motionless silence warned him not to turn. He had a curious notion that Rufe was listening to something he himself couldn't hear. It didn't seem likely, but he caught a faint hint of command from somewhere and wondered if Rufe had some plan in mind he wouldn't want interrupted. When

you have known a man as long as Morgan had known Rufe Dodd, and shared with him spots as tight as this often before now, you can catch the vibration of a silent command when there is one in the air. Morgan sat motionless, ready for anything.

Valley's opaque eyes watched Dodd. Presently the man from Venus shrugged. "Stay if you like," he said. "I would have spared you. The impulse to meddle may be very strong, major, but you're outnumbered even if you were rash enough to disobey orders. By all means, watch if it amuses you. Morgan—" His gaze dropped. "*Skalla!*" he said.

His hand swept upward in a swift, dipping arc and flashed high with the blade in his hand already glinting red with firelight. Morgan gathered himself together against the hard ground, threw his weight forward on one knee, gauged his timing, and—

A thin, high shrilling wailed like a banshee out of the dark, and Valley's lifted hand jerked convulsively. The boneless fingers spread and the red-glinting knife fell flashing out of it. A round crimson spot the size of a quarter-credit appeared by sheer magic upon the center of the lifted wrist.

Nobody moved. Nobody breathed.

Slowly Valley turned his head to stare at his own hand. It took that long for the blood to begin pumping from his pierced wrist. The first sight of it broke the spell and everything dissolved into sudden, intense-

ly rapid motion, most of it without purpose.

Valley snapped his wrist forward and seized it hard with his other hand, his face going gray as all color drained out of it. He chattered in incoherent Venusian to his men. There was tremendous scurry and confusion, in the midst of which Major Dodd's calm voice spoke. He had not stirred an inch, and he did not now except to say quietly:

"They're coming, Valley. Over the hill. Listen. I've been hearing them for about five minutes now. If you'll look, you'll see what I mean."

Everyone turned, as if on a single pivot. The brow of the hill between the spaceport and the town was outlined suddenly in a crown of winking lights. As they stared, the lights poured forward downhill, merged and blended and were a spreading river that jogged onward at the pace of striding men.

Under the torches light burned bright upon the dust-whitened heads and the angry, determined faces of the men from ruined Ancibel.

Shining Valley took the situation in with a quick, incredulous glance. He shouted orders in rapidly cadenced speech and the men from Venus redoubled their swarming pace around the ship they were loading. The last carboys went rapidly up the ladders and the rest of the workers began to deploy cautiously around the ship, unslinging their weapons.

Again the banshee wailed out of

the darkness just beyond the reach of the firelight, and one of the riflemen under the ship reeled in a circle and fell heavily across his gun. A voice called from the darkness.

"I'll nail the next man who moves! We mean business."

Morgan breathed softly, "Joe! Joe Warburg." He knew that shooting as well as he knew the voice.

The merging river of lights streamed forward at a rapid stride. Now you could see the separate faces and the dusty, disheveled clothing of the mob. Not all of them were armed. Some carried Barkers, and some had old-fashioned projectile-rifles, and some carried the immemorial weapons of the embattled farmer on every world where farmers have been called upon to fight. Morgan saw pitchforks gleam and here and there the flash of light down the blade of an ancient, outmoded scythe, which was a wicked weapon at Flodden and Poitiers, and has not grown kindlier since.

Morgan knew some of the faces. The young settler he had quarreled with in Warburg's store strode in the front rank, his ultrasonic balanced across his heavy forearm and his flat Ganymedan face crimson with anger and firelight. A white-haired farmer walked beside him, pitchfork in hand, and on his other side the parson's eyeglass lenses caught red light. The parson's palms were raw from pulling the bellrope in the church tower, and he carried a coil of orlon rope across his arm.

When they came to the place

where the banshee had wailed and the voice spoken out of darkness, a figure stood up and took familiar shape in the light. Warburg stepped out and fell into stride beside the parson, his Barker balanced lightly in his big hands, set for a killing beam.

Shining Valley spoke very rapidly in a soft, slurring voice to his men, who put their loads down and then straightened up with carefully slow motions, facing the oncoming mob. At the back, under the shadow of the ships, a few of them sank into crouches, lifting their guns and moving carefully into deeper shelter.

"Speak to them, major," Valley said. He was clutching his wrist tightly, and blood spattered the dust with light, splashing sounds. "Tell them the stampede was Morgan's fault. You saw him lead it. Speak to them—quick!"

Rufe Dodd laughed, a quick, harsh bark of sound.

"How can I interfere," Dodd asked, "between you and civilians on Loki? I have my orders, Valley!"

Shining Valley swung round toward the mob.

"Stop right there!" he shouted. "I've got men deployed around you under the ships. Stand still and nobody else will get hurt. Start something, and—"

"It's no use, Valley," Warburg said. "There's eight dead men back there in Ancibel, and two dead women. Our boys aren't in any bargaining mood. We know what hap-

pened. We saw who started this. Now get ready to finish it!"

"I call on the Jetborne!" Shining Valley shouted. "We had nothing to do with that stampede! This is mob rule!"

"These are vigilantes," the young settler with the ultrasonic said. "The Jetborne's out of it. Stand by, major, if you don't want to get your men killed. We're going to string up the killers who did this, and we won't take interference." His red cheeks flushed a deeper color and his flat Ganymedan face hardened as his eyes met Morgan's on the ground.

"We'll start," the settler said in a hard voice, "with the fellow who led the herd. Stand up, mister! You rode over ten people in Ancibel tonight. If the law won't deal with you, the vigilantes will!"

Morgan got up slowly and stiffly. He did not speak a word, but his gaze sought Warburg's with a silent inquiry. Warburg shook his gray head.

"We all saw you, Jaime," he said. "We know what happened. You didn't do it alone—but you rode the herd. There's ten people dead. And the crops are ruined. There isn't a man in Ancibel who isn't ruined right along with 'em. They sank a year's work and all the money they could borrow in those crops, Jaime. The lucky guys are the dead ones—anyhow, that's the way we feel tonight. We can't bring the dead back to life, but we can sure take care of the men who killed 'em. You're in

bad company, Jaime." His dust-streaked face was grim. "I wouldn't do a thing to stop the boys," he said, "even if I could."

Morgan nodded briefly.

"I figured you might feel that way, Joe," he said. "All right, boys. Let's go."

He stepped forward. The young settler reached for the rope the parson carried, making a long forward stride toward Morgan. Morgan braced himself, not sure what he would do next.

That was when the first shots wailed out from the shadow of the ships where Valley's men were hidden. The red-cheeked Ganymedan halted in the middle of a stride, dropped his gun, spun halfway around and grabbed futilely with both hands at his chest.

A boy jumped forward past him out of the crowd behind. It was the Mars-tanned Tim, Warburg's clerk. He seized the falling gun and went down with it, reaching expertly for the controls, his body braced and ready for the jar of his fall. The gun began to whine toward the ships in a flicker of violet fire three seconds after he hit the ground.

There was a great deal of confusion after that.

It could have but one ending, of course. The men from Venus were far outnumbered. Morgan didn't take much interest. That was because of the stunning burn across the side of the head which one faction or the other succeeded in placing on him before he prudently hit the ground

a very short instant after Tim did.

He lay there curled tight against the surging of the struggle above him, dizzy and knowing he hadn't a chance no matter who won. He was too tired to run and too dazed to fight.

He was too old.

He had some idea that the battle-field roar of Rufe Dodd's voice belated for a while above the tumult, demanding Jaime Morgan as his prisoner. But Rufe didn't get very far. The settlers had little patience with the Jetborne just now. Rufe's shouting grew muffled and farther and farther away.

Somebody kicked Morgan in the head after that and he saw a burst of the stars that line Paradise Street, and relaxed into total darkness.

The next thing Morgan remembered was the reek of trampled ground and trampled growing things. Rough, moist soil was soft under him and he heard a great deal of uneasy motion and the low, purposeful rumbling sounds of determined men around him in the night. His hands seemed to be tied behind him, and he opened his eyes to discover that he was leaning against a tree. He looked up.

The tree was a *serith* and the stars regarded him through its leaves. Head-downward over the horizon the stag-bison lurched, and blue-white Sirius at the Jet-Ship's nose pointed toward Loki's pole-star. In their light he could see the ruined fields east of Ancibel, the jagged

fragments of orchards black against the stars. So the men of Ancibel had brought him back to the scene of his crime to die. He whistled soundlessly through his teeth and sat up straighter to see what was going on.

This was the row of *seriths* that marked the far end of the fields. It was even a little funny, he thought, that a few short hours ago he'd actually been *trying* to swing onto one of these trees.

Ten feet to the right he saw a pale figure lying bound against the bole of the nearest *serith*. Ten feet to the left lay another. Each assigned to his own gallows, Morgan thought. Was that Shining Valley, at his right, fawn-colored fringes fluttering in the night breeze? He craned futilely. He thought it was, but he couldn't be sure.

Farther down the line the grim business of the vigilantes was already under way. Morgan wondered what Warburg really thought about it. It wasn't like Joe. Still, Joe had changed. Taken on settlers' ways. They were dirty ways, Morgan thought. This was no proper sort of death to inflict even on proved killers. Maybe settlers had to do it, though. No understanding how their cloddish minds worked. After all, you could hardly blame them. He'd taken his chance and lost, and when you play a stranger's game you abide by the stranger's rules. Still, it was no way to die.

They were working up the line toward him, grim, businesslike men

performing their job resolutely. Somebody dropped a rope over a limb and a muttering rose like low thunder from the crowd as the loop fell over the neck of the man below.

Morgan watched critically.

He felt tired and not particularly unhappy, after all, now that the moment had almost come which he had faced and escaped so often before, on so many worlds. He whistled gently to himself and was glad he wasn't wearing a long fringed robe like the Venusians. It fluttered so ludicrously, when a man was swinging by the neck under a *serith* tree.

The prisoner beneath the neighboring tree turned his head, catching Morgan's eye.

"*Skalla*," Morgan said. It *was* Shining Valley. Morgan grinned.

But then he looked away. He didn't particularly care for the thought of the company he had to keep on this final journey. It probably didn't matter. He whistled quietly to himself.

Something rustled very gently in the dark behind him. He tightened all over, litsening. Then a cold touch slid like metal against his wrist and the rope that tied him gave slightly.

"Hold still, you fool," Joe Warburg's voice muttered.

Morgan picked his way carefully along the backs of Ancibel's houses, keeping to the darkest shadows. There were more people in town than he would have thought, considering the crowd out there in the fields.

He didn't feel very good. His head still buzzed from the beating he had taken, and he wasn't sure in his own mind that he'd really held that quick, muttered talk with Warburg in the shadows behind the *serith* tree while the vigilantes worked their way grimly nearer and nearer. It seemed now more like a dream a man might have, waking after a knockout blow.

"Hit for town," Warburg had urged him in the dream. "Make for the alley behind the last saloon facing the spaceport. Keep under cover. You old fool, did you really think I'd let you hang?"

Maybe it had really happened. Maybe it hadn't. Anyhow, here was the alley. Morgan flattened himself against its wall, darting quick glances up and down the street beyond. Ruined buildings, ruined pavement, a huge dead Harvester bull lying on its side, a nervous settler or two picking his way along toward the center of town. Why was Morgan here? What had Joe had in mind?

"Maybe my ship's at the port?" Morgan wondered. "Maybe old Joe filled her up? I wish I knew what—"

Then he heard the beat of marching feet, and flattened himself harder into the shadows as a detachment of the Jetborne went by, brown legs moving in unison, brown arms swinging. Morgan stood motionless, letting them pass perilously near.

Last of the Jetborne came two officers, walking side by side. One of them was Rufe Dodd.

Rufe passed just beyond the

mouth of the alley. Morgan could see his shadow on the trampled street, hear his crisp voice speaking.

"You can start searching from the east edge of town," he said. "Spread out fast. He escaped only ten minutes ago. He hasn't had time to get far yet. On the double!"

The footsteps of the Jetborne went on, double-time down the street. Dodd said, more quietly, "What are you waiting for, lieutenant?"

"Your orders, sir. You said—take him alive?" The other voice was puzzled.

"Certainly. I want Morgan. He's got charges facing him."

"But he's dangerous, major. He's tasted blood now. Should I risk my men unness—"

"You questioning my command, lieutenant?"

There was a little silence. Dodd's shadow on the street got out a shadow-cigar and lit it leisurely, puffed smoke toward the stars. Morgan could smell the fragrance of Mars-bred tobacco. He couldn't see the other man at all. He wondered if his own heartbeats were not making very audible thunder in this narrow alley. When Dodd spoke, his voice was calm.

"Jaime Morgan won't kill anybody else tonight, lieutenant," he said. "It isn't a matter of tasting blood. It's a matter of touching pitch. Morgan got too close to civilization and he got himself fouled with it. But it'll wash off. Maybe he's learned

the lesson he was bound to learn, sometime."

There was a pause.

"Sir—"

Dodd paid no attention. "Yes," he said, "when a man's young, he's always on the move. He can't stop too long on any one world. But he gets habits, and they slow him down. One day he finds he isn't ready to leave when the time comes. But he can't stop civilization moving in, the good and the bad of it. What can he do? A world gets civilized; nothing can stop it once it gets opened up. So a man like Morgan gets sucked in before he knows it. He's got to follow the rules of civilization, even when he thinks he's fightin' it. You can't be neutral. Morgan didn't know that."

The shadow puffed smoke fragrantly. "Loki isn't Morgan's any more. It belongs to the settlers. But the sky's still full of stars, lieutenant. You heard about that new planet they've opened up, over by Rehoboem IV?"

The lieutenant's voice said, "That's another thing, sir. We're not guarding that freighter. If Morgan should hear about it—if he should stow away—"

"He doesn't know the *Ninevah's* taking off at dawn," Dodd said, enunciating his words with great distinctness. "He doesn't even know I've lifted the grounding orders. There's no need for a guard around the *Ninevah*. A man follows his habit patterns. Morgan will take to the woods." He chuckled. "Morgan's

too old to change," he said with a certain sardonic inflection in his voice. It sounded like a challenge. "He's forgotten what other worlds are like. He doesn't remember the cockeyed giant."

"Sir?"

"Never mind, lieutenant. Get along now. Better join your men before you lose them."

"Yes, sir," the voice said, not quite convinced.

"Let's go," Dodd's voice insisted, and two pairs of footsteps moved away. Dodd's voice floated back, clear and thoughtful.

"There'll always be worlds to open, you know, and there'll always be men like Morgan to find them. There always has been. There always will be. One of the old poets wrote about Jaime. He said a man like that would always know there

was—" The voice paused, then strengthened into firm command. "*—Something lost beyond the range—lost and waiting for you. . . . Go.*"

Heavy boots rang loud on the dark street, and less loud, and then mingled with the other night sounds.

Morgan stood quite still until the last rhythmic beat of footfalls was silent. Then he tipped his head back and looked westward toward the port. He saw five tall ships and the shining sky behind them.

He was feeling very sad, but much better, and hardly old at all. He stooped quickly once, and touched the ground. Good-by, Loki, he thought. Good-by, world.

Then he turned in the dark and ran soundlessly toward the west and the towering ships and the endless reaches of Paradise Street.

THE END

THE ANALYTICAL LABORATORY

Maybe the May issue—which stirred some three thousand readers to write letters—got people in a writing mood. In any case, an unusually large number of votes came in on the June issue, so we have a better-than-usual sampling of reader opinion. And it comes out thusly:

Place	Story	Author	Score
1.	The Wizard of Linn (Pt. 3)	A. E. van Vogt	2.15
2.	The Maze	Frank M. Robinson	2.62
3.	Incommunicado	Katherine MacLean	2.91
4.	The Evitable Conflict	Isaac Asimov	3.05
5.	Punching Pillows	Cleve Cartmill	4.10

It appears that Frank Robinson did well by himself; that was darned stiff competition, and getting that far up the list makes it appear we have a strong new contender!

THE EDITOR.

METEOR

BY WILLIAM T. POWERS

A meteor that strikes a spaceship can destroy it, disrupt its whole structure if it's big enough. But even more, a meteor can disrupt the whole structure of interplanetary travel without touching a single ship!

Illustrated by Brush

Tobias Henderson, master of the British freighter, *Bronson*, was relaxing at tea. The Callisto-Mars run was long and dull, but Tobias knew how to be comfortable. In fact, getting comfortable was the one thing at which Tobias was better than average. He had to be. Free-flight and Martian sauces had combined their effects to make him the third largest item on the *Bronson*, and one might have debated the advantage held by the computer-detector.

For reasons other than jealousy, Tobias hated the computer. The main drive might flatten him somewhat on take-off and landing, but the computer had been known to snatch the *Bronson* from under its

master's feet, causing him to misname countless safety-engineers, just to avoid some pebble. Today, as usual, Tobias squinted at the computer before he injected his cream into the tea bag. Promptly, a red light popped on.

"Coward!" Tobias muttered. "It won't come within a hundred miles!" The red light went out. Tobias creased his face in brief triumph, then pulled the stopper out of the tea bag and inserted a straw, an uncivilized process made necessary by free-flight. The red light popped on again. Hopefully, Tobias ignored it.

Something clicked rapidly in the bulkhead where the monster was hidden; Tobias sighed and braced

himself for the recoil of the blasters. Unfortunately, a grip on the desk was not enough to save him. The *Bronson* shuddered sideways, skittering out of its orbit to let something too big to blast go by. Tobias, unable to express himself, oscillated to a stop in his triple harness and glared in black silence at the globules of tea quivering off the bulkheads. After a suitable pause, the computer went *ahem* and slid a card out where Tobias could see it.

The lettering was red.

The meteor was out of sight of the *Bronson* in a few seconds, plunging on toward the orbit of Mars, aimed a little above the Orion nebula. This was a fast meteor from outside the system, nearly zero Kelvin, six miles across. One flat side might have been a plain at one time; the other surfaces were harsh and jagged, signs of a cataclysm. The sun lit an exposed stratum, picking out the fossil of an ancient tree.

Thirty miles a second the meteor traveled. In twenty-four hours, it would have gone the twenty-five hundred kilometers separating it from the orbit of Mars. The intersection point was no more than a thousand miles from the place where Mars' advancing limb would be tomorrow.

Phil Brownyard dropped a penny in the You-Vu-It just in time to see a screenful of little bright spots fade to a shot of an announcer.

"There you have it, folks. Danvers came up from the sixth quad at well

over three miles per second, just in time to avert a scoring play by Syverson and Phelps. His ship snagged the Mark into free territory, but he couldn't turn fast enough to keep in-bounds. That, of course, ended the period. Now a word from—"

Phil reached out for a switch, but the commercial droned on. Frustrated, he grumbled and pushed his dessert away. He had a grudge against the game of Ten-Mark that included its sponsors. The pilots who played had a rugged, exciting life, full of pretty girls, big money, and sudden death. Two years were all a man could stand of the screaming accelerations and close shaves, but those two years—! Phil shoved his chair back and headed for the elevators. Pushing his way to the expresses, he glimpsed Fred Holland from Computing coming around the corner; he stood in the doorway of the car until Fred caught up.

"Hi, Phil!" Fred grinned. "Have a cigar!"

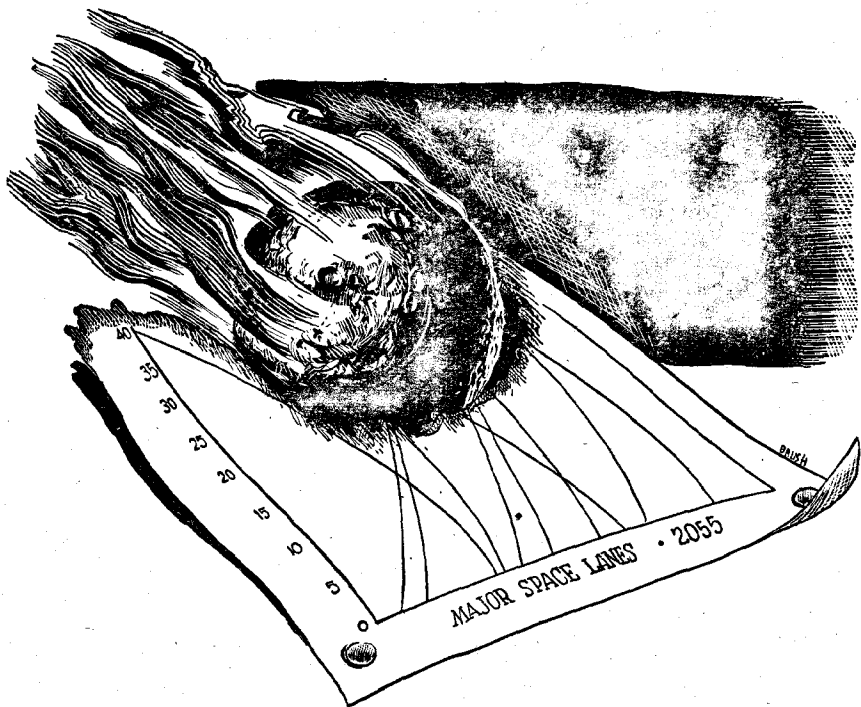
"Boy?"

"Yep." Fred grabbed for the hand-rail as the car shot up the shaft. "Twenty minutes ago. Aggie just vised me and everything's all right."

"Tell Aggie Claire will be over tonight to help out."

"Thanks. She could use some help. Well . . . so long. Wait, your cigar!" Fred thrust a couple at Phil and hopped out the door. The car lifted swiftly and Phil pushed the buzzer.

"Six-forty." The operator snapped as the door whipped open. Phil stepped out, ducking a little as a



monorail messenger-car rushed by overhead. He pushed through the door marked Safety, waving hello to Doris, and went into the office.

Run, run, run, he thought. *Am I glad I'm not in public relations!* The swivel chair was big and soft, so he relaxed and pulled out a cigar.

Behind him, monstrous New York City stretched. The six hundred fortieth story of the Government Building overlooked the city from half a mile above the top passenger levels; sixty miles from Phil's window the lights of the North Highway glowed steadily.

Ten thousand square miles, eight-een million people, a vast system of

conveyers, highways, terminals; a billion dollars worth of trade every day. New York City, 2055.

The periphery was lined with homes that spewed hordes of commuters every eight hours. Past neat factories and a few local airports the subways sped, the crowded tunnels boring into the deepening pile of the city. Above them mounted in higher and higher tiers interlocking roadways, flat, sinuous conveyer-housings, office buildings and freight terminals climbing over each other. The hum of the city deepened to a growl, grew to a rumble, swelled into thunder; the sound drifted up past the levels, picking up the *zum*

of tires and the crowd-babble. The sound filtered around steel and stone and hung among the upthrust skyscrapers, fading at last into the dark upper air.

On the tip of every spire were thick-limbed UHF arrays pouring out power to the stars. The million kilowatt beams swept steadily through the sky, balancing on the rotating earth, hurling their messages through the system of planets.

Back through the Heaviside Layer, feeble signals returned, to be gathered and sorted by the city's robot brains.

In a corner of the government computing room, a silent coder came to life. A card hopped into one of its racks, and the machine buzzed briefly. The card, punched and stamped, slid quickly into the works of the nearest idle router.

Plate voltage flashed briefly, and the monster decided to send the card to Safety. Along a hidden wall the card sped, up one floor and into another router that punched it twice and sent it to Spatial Debris.

At the first sign of life from the next stage, a signal was shot down five stories to Computing, where the termination of phase one was recorded on microfilm.

Phase two began. Electronic fingers probed the card and withdrew. A rudimentary brain thought a moment, and a little set of thumbs descended to press the card, embossing on it the co-ordinates of an orbit. The card jumped ahead ten inches

and a metal stamp jolted it. A pneumatic tube flipped open and the last machine capsuled the card, which now bore one red edge and the admonition, "DANGER." The card whistled up five stories and thumped to a stop by Phil's left elbow.

Phil looked indecisively at the ash on his cigar, then flipped it off and ground out the stub. He reached for the capsule, tingled a bit when he saw the red edge.

A print-send writer stood to the left of the desk; Phil inserted the card and the machine began to clatter. A strip of tape inched out.

"Meteor. A-2 to B-5. 27-32 mps. det. 2994663.6033. Coord. 270.665 - 160332 x 10³ - 710.4 Dir.Cos. 0.000355,-0.554639. 29.358 mps."

The rough equation of an hyperbolic orbit followed. Phil went to the lucite plan-map of the minor planets and began to plot points. Four points fed into the Curvator sufficed; an arm descended over the chart and began to trace a heavy black line, jogging at equal-time intervals. The tip of the arm approached the orbit of Mars, intersecting it just as the red spot designating Mars moved into its path. The Curvator, having reached the limit of its accuracy, stopped and flashed an orange light that meant "possible collision."

That meant that the meteor would miss the planet by no more than eight thousand miles, if at all. Phil was by now totally alert. The probable mass of the meteor was twelve billion tons, its velocity thirty miles

per second. Only the heaviest of equipment would be capable of breaking it up and diverting the pieces into the sun. Were it to strike Mars, it would pick up another three miles per second before it hit, then it would release the equivalent of five billion kilowatt-hours of energy in a fraction of a second. A large piece of Martian vicinity could be vaporized.

Another card called Phil back to his desk; he gave it a quick glance and filed it. Now there was work to be done; Mars had to be warned, although New Pitt undoubtedly had received the report.

A quick call to Computing set Fred Holland to work on the exact orbit, and Phil turned to the chart again. The markers on the orbit showed that about twenty-two hours remained—New Pitt, on Mars, would pick up the meteor in roughly an hour. Phil sent a copy of the orbit out to Doris, with instructions to get it on the emergency circuit to Mars.

The preliminaries over, Phil sat behind his desk and began to have his customary regrets. Whenever a big rock struck the space lanes, Phil wondered what he was doing here. Whenever the rock was really big, the chief of SD slashed the arteries of the Solar System with efficiency and finality. The advent of robot freighters had made the job easier, but still each day's ban cost somebody millions. Phil bit his lip and lit another cigar. The responsibility of his office was not to save millions, but to save lives.

The minute hand crept forward, timing the flight of his message. In just seventeen minutes from the time Phil gave Doris the message, acknowledgment arrived. Doris brought in the spacegram personally.

"Mr. Brownyard—" She hesitated at the door.

"Good, they didn't waste any time." Phil reached out and Doris came up to him with the message.

"Mr. Brownyard, can I ask something?"

Phil looked up blankly from the spacegram. "Huh? Oh, sure. What?"

"Well . . . my boy friend is on the *North America*. I wondered if you could tell me—" She stopped. It was strictly against the rules to give any advance information.

Phil hesitated. The spacegram said that the route outbound from Mars had been changed, and nothing more.

"I'd like to help," he said, "but I'm afraid we don't know the situation yet about the Earth-Mars route. Don't worry, though. We don't miss on these big ones."

Twenty-one hours later, he was staring at another spacegram, remembering his comforting words of the day before. The heading was EMERGENCY; the spacegram was direct from the Stag Head detector station.

METEOR 842M2055 OUT OF CONTACT. EAST STATION INOPERATIVE, STAG HEAD STATION HORIZONED. LAST ACCURATE ORBIT—

Phil dropped the spacegram and looked back at the chart on the desk. The red line of the meteor's orbit made a shallow curve that missed the planet by a scant eighty miles. Arcing outward from Mars, the line was dotted. From there on, it was guesswork. Atmospheric drag and the proximity of Deimos combined to make the uncertainty in the orbit dangerous.

Phil buzzed Fred Holland and reached for the standard route-cancellation form. Forcing all misgivings out of his mind, he printed carefully the necessary information and orders.

The Earth-Mars route had to be cut. From now until SD said all clear, no ship would run in these lanes, or anywhere within a spreading truncated cone that represented the danger volume. No ship would move between Earth and Mars except by the long expensive detour out of the ecliptic. Phil sent the form out to Doris, glad to get it out of sight. As an afterthought, he buzzed her.

"You don't need to worry about your boy friend. He's taking the long way around."

"Thanks a lot, Mr. Brownyard. I guess I won't get his wire for a couple of days, then." She let him break the connection.

Phil paid no attention to her last words for a moment; then the implication sank in. "A couple of days—?" That could mean the *North America* was nearing the danger volume. He began to check.

"Terran Lines? Spatial Debris calling. Message number, July 3357-563. Get the *North America* off the route, but quick. Never mind, just get her at least eight hundred kilometers above the ecliptic, or equivalent. This is official. Now get me her position."

A short verification of his authority followed, then the Terran operator relayed the request to the *North America*. The wait was almost fourteen minutes, by which time Phil was visualizing a ship, crushed and shattered, being swept through space by the massive meteor. The Terran man reappeared, looking pale.

"I'll send it over on the writer. We just got the flash from your office, and we're right smack in the middle. I hope you guys know what you're talking about."

"If I were you, I'd hope we didn't," Phil said, and cut off.

He looked in the writer and got the message. *The North America would be making an emergency turn by now*, he thought. *Hope it doesn't take them into the wrong spot at the wrong time.*

Spatial Debris began to hum. Phil had made the first decision; now the rest of the office was busy. A flight on another passenger line was canceled fifteen minutes before take-off—too close! All the robot freight companies were checked and individually warned. On the master chart in Phil's office, little dots accumulated, making a dense stream along the space route. Eight hundred ships,

a quarter of them carrying passengers, were diverted. No more than two hours passed before complaints began to roll in by spacegram and by viser.

"I'll lose a good prospect if I don't deliver—"

"Exactly where is this meteor—?"

"Why don't you jerks leave us alone? I've been in space thirty years—"

"How long—" (*How long, Phil thought, can seventy million miles be?*)

He stood it for half an hour, then had the public line disconnected and received only official and emergency calls. The next call he got was from Terran Lines. The *North America* had reported a brief sight on the meteor, but no data on it; the ship was in its emergency turn. Could she go back on course?

Phil told them to hang on a while. He gave the meteor an approximate position, estimating from the position of the Terran ship. The dot lay far above the danger volume.

"Permission refused. Not the same meteor." Phil switched to video and explained. "It's probably a small, close one, blastable. You can sit easy, though. Your ship's out of danger as long as you keep her north." The Terran agent thanked him, with reservations—canceled reservations, probably.

The meteor's path clung obstinately to the trade route; its progress was measured not in linear kilometers, but in days, and the days looked to add up to several weeks. Govern-

ment blasters took off from Mars trying to locate the rock, while Phil started losing sleep.

A week passed. The blasters had returned four times and had hurtled off again. Somewhere out there a six-mile mote was falling toward the Sun, and while electronic nets were spreading, the system was suffering.

"SD STILL SAYS NO!" said one headline; another gently hinted, "FORTY MILLION DOLLARS SO FAR!" The safety bureau took a beating from all sides. Daily, on the financial pages, a little box appeared giving the space-time coordinates of the meteor. As the weeks wore on, the blasters began taking off from bases on Luna, searching doggedly for a grain of sand in a flour bin. By now the danger volume was an impossible ten trillion cubic miles. The thinning stream of ships was flowing almost Ecliptic North from the Earth as Mars approached conjunction. No ship gleamed along the whole free-flight trade orbit.

Well—one.

Planetoid 17321 belonged to Terry Carson by virtue of a claim filed in Big Bay, Mars. Terry's ship was resting lightly against the half-mile boulder while Terry was "underground" in his pneumatic hut, tight. 17321 was on the chart in Spatial Debris, and its orbit was known exactly. The fact that it was inside the danger volume was of incidental interest. The fact that there was a man in it would have attracted

a good deal more attention; however, Terry's flight plan was crushed somewhere in the works of the crippled East Station.

The tunnel Terry had dug extended forty yards into 17321. The walls were plain rock thirty-six yards of the way, right up to the door of the pneumatic hut. From there on, the pick strokes had flaked off blue-gray chips in isolated spots, spots that came more frequently over the last yard. Terry was sitting inside his rubber-canvas hut, a bottle in one hand and a chunk of pure galena in the other.

"I'm rich," he murmured happily. "Hear that, Carson? You're rich. He's rich, they say. She's rich, it's rich." He let his head drift down on the sleeping bag and chuckled in his belly.

The vein was ninety feet thick, fifty yards across, pure lead sulphide. Terry had been looking for this rock from the time of the Tompkins strike, eighteen years ago. Eleven fragments of a larger planetoid had been found, each containing a segment of lead ore vein. A topologist friend of Terry's had pieced the rocks together on paper. He had found a gap in the vein, and 17321 was the missing piece. Soviet Atomic was currently paying two-fifty a pound for lead, correspondingly for ore. Terry did some figuring.

Terry tilted the bottle again. He whispered: "Maybe a million bucks!" He reached for his portable radio.

If Terry had kept up on current

events, he would have known that Earth station KWK had switched off its beam for the duration of the emergency. But then, Terry didn't know there was any emergency. He batted the plastic box, but all that came out was the hiss of the distant stars. The gold leaf showed that the filaments were still active; it indicated that the batteries and electrets were good enough. Terry began to feel uneasy.

He scrambled into his suit, the effect of the alcohol wearing off. Back at the ship, he switched on the long-range radio and fiddled the dial back and forth while the power supply warmed up. Still no KWK. He spun the dial to WLW, and blew out his breath in relief. The familiar reliable time-ticks beeped away, and Terry relaxed and listened. He spun the dial to the MBC—their wide beam inclosed 17321—and he had music. The default of KWK passed quickly from his mind, and he flopped in his bunk and dreamed, his fingers twitching now and then as he peeled off a hundred-dollar bill.

At 0645 UT, the news came on. Terry paused in the midst of purchasing an Indo-Venusian palace, sat up gradually, and froze.

"... The situation is rapidly becoming serious." The commentator was saying. "For the last three weeks, trade has been falling off at an increasing rate. Conjunction is only a month away, and passenger lines are straining at the leash. Nobody wants to travel. The Depart-

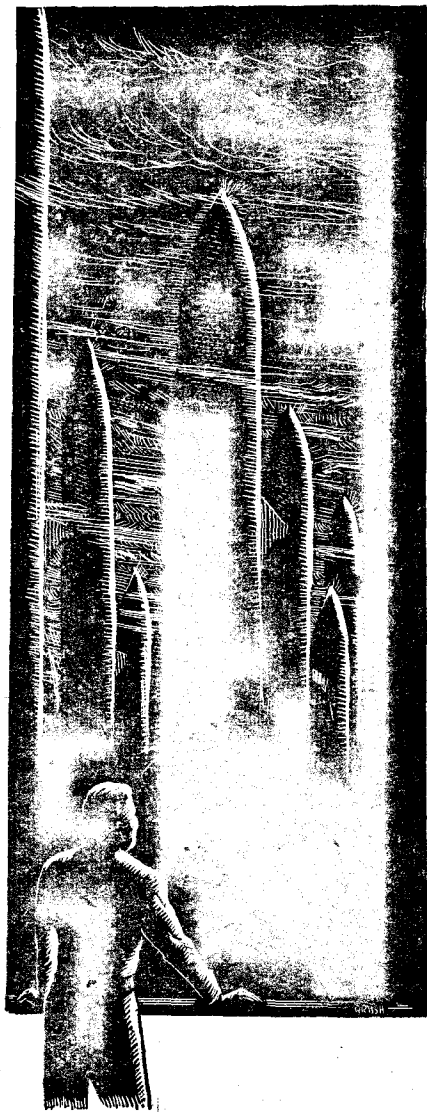
ment of Safety remains obstinate—no direct flights until the meteor is gone. One wonders a little—the government has sent over sixty long-range blasters after the meteor, and there hasn't been one contact. At a time like this, yours truly would be inclined to say, 'Look before you leap.' Are you listening, Mr. B?"

At 0700 the co-ordinates of the meteor were broadcast. Terry was startled to hear how large the uncertainty was, and it was with reluctance that he punched the necessary figures into the computer.

"I'm in it!" he despaired. "They can't do this to me!" But he knew they could. They could send out a blaster after him, leave 17321 unguarded. They could—

If they were coming after him, Terry reasoned, they would have arrived long ago. So, he guessed more or less correctly, his flight plan must have been snarled up in red tape. He chortled, then swallowed his laughter. Sure, he could stay here—but if the meteor hit, by some long chance, he'd lose both his strike *and* his life. He chortled again, uncontrollably, and then giggled.

In an instant he was through the mid-section hatch fumbling with the air-generator. The increasing numbness of his fingers hindered him, and he had to concentrate to remember which way the valve turned. The oxygen-content meter was up to sixty percent. Deliberately, Terry slowed his breathing, and reluctantly bled the ship, running helium into the ship's atmosphere until the oxy



meter was back to normal. With a start he noticed that the helium tank was nearly exhausted; then he noticed that the hiss of incoming oxygen was still sounding. Terry's heart wrenched as he stared at the oxygen gauge. He figured quickly—twenty minutes. Twenty minutes! A leak. All the time he had been digging, celebrating, the main air supply had been draining out a puncture. As he watched the gauge needle twitched and came to rest again a fraction of a division from the stop. Terry tapped the dial, watching the needle quiver toward zero. Red flag, air supply gone. He breathed deeply, waited two more minutes, then when he could get no more from his ship's vanishing atmosphere, donned his suit. Four hours of air remained in its tank and regenerator, maybe twelve hours in the hut. Sixteen hours left to breathe. So Terry did what any old hand would have done. He set the distress signal to WLW, beamed it at Earth, and went to sleep. The signal screamed its hundred-megacycle note down the empty space lane, and was lost.

Peter Hedrick, smuggler by trade, watched a cold Alaskan sky darken, and wrote in his log, "0700. Sky becoming overcast. Take-off in thirty minutes. Consignment, Poppy seed to Big Bay." He had a fine load, a big fast ship and a space lane all to himself—almost. One meteor was worth chancing. He snapped the log shut and strolled toward the camouflaged ship.

"My dear," Mrs. Ashton confided to the private telescreen, "I know just how you feel. Now don't worry a bit. After all, your John always did like to have his little flings, and everyone understands. He'll be back. And I wouldn't worry too much. Peter says he has it from a very good source that this whole thing is just another meteor scare."

The screen babbled back briefly.

"All right," Mrs. Ashton smiled. "I'll surely let you know. Bye-bye." She cut off the screen and let the smile become a smirk. Mrs. Phelps' superb husband was in his private yacht somewhere between here and Mars, and everyone but Mrs. Phelps knew he had company. For a few moments, Mrs. Ashton considered the dramatic possibilities in Mr. Phelps and his yacht being crushed by the meteor, but not beyond recognition.

Phil Brownyard was beginning to repress all optimism concerning the position of the meteor. The failure of the blasters to locate it gave pretty good odds that it was well out of the volume assigned to it, and that meant out of the shipping lanes. But there was always one chance. Phil merely shoved the other nine hundred ninety-nine out of his consciousness and clung to that one.

He got to the office early the twenty-eighth day after the alert. There was no sense in sitting at home in the dark, so he opened the office at 0725. The reports were still the same—no contact. The black line

on the chart extended now from Mars to within two million miles of Earth. Half a day at the most before Luna would pick up whatever was there. Phil gave a nervous yawn.

The clock crept laboriously to 0730. Phil doodled on a pad, drawing daggers and ominous blots. 0731. He got up and looked out the window at the city, noting the beauty of the towers in the early morning light. 0732. Out in the corridor messenger cars whipped back and forth; all the building was alive except for Spatial Debris and a few others. Phil sat in his soundproofed office and bit the end off a cigar. Paper rustled as he propped his elbows off the desk.

At 0734, the telescreen shrieked. Phil jumped, dropping his cigar. Before the automatic dial could switch the call to his home, he flipped the toggle and leaned forward.

"Brownyard?" A switchboard operator stared sleepily at him.

"Yeah, who is it?"

"Mr. Cushing of Terran Lines, collect. Will you accept the call?"

"Go ahead."

Cushing's face blurred too close to the pickup lens. "Brownyard, we've found your meteor!" He roared. "It just hit the *North America!*" The screen blanked out.

Instantly it came to life again. An excited young man appeared and stammered, "North Station Luna calling. Meteor 842M2055 detected. Co-ordinates and orbit follow."

Phil acknowledged automatically, knowing it was too late. Switching

to another band, he called the night Safety office. His stomach knotted, and hurt.

"What's this about the *North America?*" he asked Jim Shepard.

"Oh . . . you, Phil. Well, she's hit all right. Taking off for Stag Head. Collided at sixty-eight thousand miles; almost nothing left. The patrols are going after her now."

"O.K." Phil started to sign off, then tensed. "Hey . . . hey—!"

"Yeah?" Jim reappeared, his face sympathetic.

"What did you say her distance was?"

"Sixty-eight kilomiles. Why, do you think—?"

"You bet!" Phil stiffened his aching back and went to work. "That couldn't have been our baby. I just got a contact report from Luna, and I was still convinced that 842 had got the *North America*. Let's get busy—here are the co-ordinates." Phil dug into the writer and came up with the message card. He stuck it into the slot under the screen, received the acknowledgment, and cut off. His hands were shaking badly.

How many hours to work? Phil retrieved the card and scanned it, then went to the chart and plotted the point. Nine hundred and eighty kilomiles. That left—nine hours. Only nine hours for the blasters to try to match velocities, nine hours to— Phil tightened inside as the curvator started forward to trace a new black line. It swept inside the orbit of the Moon, straight into the green disk that was Earth. The

crimson light went on.

He had known it would end this way, for a long time. From the instant he had deciphered the first flash, he had had a funny feeling; he had known that the danger volume would sweep over Earth, but he had hoped for just a little more luck, one little favor from the laws of probability. The invisible fingers of Earth tugged, and the great rock obeyed.

Trembling with tension, Phil called Computing and got them to work. In half an hour the answer returned. The west coast of the European continent would be hit; it would take three hours to pinpoint the spot.

Phil frowned and rubbed his forehead. It was silly to feel this way, of course. He had carried out his duties as well as he could—a thousand ships had been warned, the space lanes had been held clear. But he felt a sense of responsibility that he could not shake.

At eleven fifteen Fred Holland walked in holding a card. "Here it is. We've got it down to a twenty-mile circle in southwestern France. Impact time is 1618." He dropped the card on the desk. "Look, Phil, there's nothing you can do that you haven't done."

"One more thing." Phil took the card without looking at it and sent it to the main Safety office. "Now I can resign."

"This is Jim, Phil. The *North*

America was hit by an unscheduled ship that took off from Alaska somewhere. What's the dope on the meteor? I heard it's bad."

"Yeah. Southwestern France, somewhere." Phil wondered vaguely about the identity of the other ship. For some reason, the feeling of guilt grew stronger. "Any survivors?" he asked.

And his heart did not change its pace when Jim said, "No."

Thirteen hundred, and the hourly news. Phil listened dully as the reports came in from the reopened space lanes. A private yacht had been sighted cruising illegally in the lane. Some scandal or other impended. Planetoid 17321 left the lane and the gap caused by its presence closed. Collision near Mars in the rush to take advantage of approaching conjunction. Stag Head Station operative again. On and on.

The meteor was between Earth and the Moon, now, its pace quickening. In two more hours and some minutes it would rocket into Earth's atmosphere; incandescent and thundering it would smash into France with a towering splash of earth, rock and living things. Ten million refugees streamed along the roads leading out of that imaginary circle, quiet and terrified, peering into the luminous afternoon sky. Police were thick in the mobs, suppressing panic.

Phil quit listening to the news at 1500. He busied himself around the office, collecting papers accumulated over the past eight years.

Maybe I can afford to retire. That would be nice. Get away, at any rate. Maybe Claire would like Venus.

He came on the computations he had made, those about the mass of the meteor. A strange hope kindled, but the figures were right. He began to fill his briefcase. As he started to leave, he looked long at the clock. Twelve minutes. As the door shut, a card in its capsule bumped against the end of the pneumatic tube. The punchings on it indicated that a distress signal had been picked up from somewhere near the trade route.

Eight years ago, a meteor had got by the warning net—another big one. That one had smashed into a loaded passenger liner, and the disaster had broken Phil's predecessor. Now Phil had to watch an even worse disaster—had watched it from its first remote beginnings.

He sat in a subway train, holding a newspaper and looking at his watch. Not many people were in the car—most of them were sitting by television screens, watching France with morbid anticipation. The car whistled past a few deserted stops and began to brake. The minute hand on Phil's watch crept over the ten, past it, while Phil read the billboards.

Two minutes. The train started smoothly, went quickly to maximum velocity, then slowed for Phil's stop.

"Phil—is that you? Hey, Phil?"

He looked up blindly, then glanced

out the window. The end of the line. Must have missed my stop. Claire will be worried—

"Hey, Phil—" Fred stopped by the hunched figure. "Come on, Phil, I'll take you home in my car."

It was pleasant to lie in bed and only half-think. The sun shone warmly in the window and the sky was blue. Phil smiled and stretched. Then his head swung to the window—the sun was too high! It must be noon! He started to get up, and felt an overpowering lassitude cloud his mind. He lay back and thought, *They'll call me if they need me.* The dusk swirled around him and he relaxed in it again.

The second time he woke he felt his mind gradually coming to life. Bit by bit, his senses returned. The covers were too warm—it was dark again—someone was in the room.

"Claire?" A sense of panic stirred him.

"Quiet, darling. How do you feel?"

"All right, I guess. What time is it?" he relaxed.

"Nineteen thirty. Are you—all right?" her voice showed strain.

"Sure, honey. Turn on the video, will you?" Claire turned, tears of relief in her eyes.

"All right. Fred wants to see you." She stopped at the door and smiled at him. "We were worried about you, darling."

Phil got up as soon as she had left and went to her dressing table. In the mirror his face was puffed with sleep and lined by long fatigue. He heard Fred coming and got back into bed.

Fred came over to the bed and grinned down at Phil. "Boy, you look like hell."

Phil found himself grinning back, feeling better. "I sure blew myself to a tantrum."

"The doctor said human beings still have to sleep now and then."

"What about the meteor?"

Fred sat back and looked quizzically at Phil. "Still think it must have been your fault?"

"No . . . I guess not. No."

"Well, then, you'll blow your cork when you hear." Phil's heart started pounding violently.

"It came in, all right, right where we planted it," Fred said. "Only it burned up before it got through fifty miles of the atmosphere. What a show!"

"Did they blast it?" Phil sat up in bed.

"Nope. Same meteor Luna spotted. Only those kids on Luna

never thought to check on the mass. It weighed just a little over half a ton, and blew up halfway down."

"But where's 842? Are the lanes still cleared?"

"Eight forty-two? Nobody knows. T. V. McPherson says he found some big gouges out of Deimos that look recent. Your baby is probably way, way south by now, according to him."

Phil began to laugh.

"What's the matter?"

"Nothing. Just struck me funny. I've been losing sleep over a ghost of a meteor for a whole month. Nine hundred and ninety-nine chances, and I had to take the one left over. Look . . . I'll see you tomorrow . . . come over for dinner. Right now, I'm going back to sleep. Excuse me." He rolled onto his side and began to drift off. As Fred reached out to turn off the video, the announcer was saying something about a prospector; something about a prospector who might have been lost if a patrol craft hadn't chased a yacht into his failing distress beam. But before Phil could get it straight, he fell asleep.

THE END

* * * * *

WHY DO THEY DO IT?

BY L. SPRAGUE DE CAMP

Some men perpetrate hoaxes for sheer fun for themselves; some to amuse others. And some for more serious — and seriously aberrated! — reasons. And some of those hoaxes are fantastic indeed!

Hippolytus O'Gomez—let's say—publishes a book wherein he claims to prove that the pyramids of Teotihuacán and Xochicalco in Mexico were built, not by the Toltecs or Aztecs as has been thought, but by the Oyster-men of Ptui who came to earth a couple of hundred years ago and founded all human civilizations.

As proof Dr. O'Gomez submits a number of squiggles which—he says—are inscriptions he found in a lost city in the Mexican jungle. Moreover he alleges he has lots more evidence, and hints darkly of ancient manuscripts from the private library of the Dalai Lama and other surprising sources. He only hesitates to publish his material all at once because he knows the scorn and contumely that await any bold pioneer

in the advancement of human knowledge.

At which point somebody rises to cry "Hoax!"

And then it must follow as the night the day that somebody else rises to defend Dr. O'Gomez. After all, he says, it's incredible that a distinguished scientist with a long record of noble work should stoop to such cruel and base wickedness as perpetrating a hoax. Moreover his book is so learned—even the defender is unable to understand all of it—that there must be something to it. And what motive could Dr. O'Gomez have for such a fantastic jape? Furthermore, he wouldn't lie about the Oyster-men because he'd surely be found out. And finally those who accuse him of hoaxing are just a lot of

blind, stubborn, and prejudiced old "orthodox scientists," the same sort of people who ridiculed Columbus and the Wright brothers.

So distinguished scientists never lie or play hoaxes, eh?

Let us recall the sad case of Dr. Paul Kammerer of Vienna, a couple of decades ago. Kammerer adhered to the discredited theory of Lamarck, that acquired characteristics are inherited. In other words, if a beast's body be altered by exercise, mutilation, or diet, the beast's offspring will tend to show a like change. (This is essentially the teaching of the Michurin-Lysenko cult, which has been made official dogma in the U.S.S.R. and whose opponents have been cast into outer darkness. To settle the dispute you need only ask yourself one simple question: Did you ever hear of a Jew who was born circumcised? If Lamarck and Lysenko were right you would have.)

Anyway, Kammerer was working with the midwife toad—*Alytes*—of Europe. He claimed that by forcing successive generations of these toads to live either altogether in or out of water, he brought about permanent, inheritable changes in their habits and structure. On the strength of his book Kammerer was offered a job in Russia, since the government of the U.S.S.R. for ideological reasons has long been eager to encourage Lamarckian and other anti-Mendelian views of heredity, regardless of the facts. (These reasons go back ultimately to the egalitarian

doctrines of Jean Jacques Rousseau, which I mentioned in my piece on Diffusionism.)

Before Kammerer could go to Russia, however, Dr. G. K. Noble of the American Museum of Natural History got possession of one of these toads and put it under a microscope. He then revealed that one of the supposed new characteristics of the creature—horny pads on the thumbs—had been faked by injecting ink into the specimen.

Kammerer, his career in ruins, wrote a farewell letter to the Communist Academy in which he denied his guilt and accused a former assistant, and killed himself.

And to this day nobody really knows who injected the ink, or why. Did Kammerer do it for dear old Lamarckism, or in hope of bettering his job? Or did the assistant do it, either to please his boss by showing him what he wanted to see, or to cause him trouble when the fakery was found out?

Whatever the explanation, you do see that hoaxes, even hoaxes of major importance, do occur in science? They are, therefore, something to watch out for, something to explain, and something to use as a legitimate plot-element in science-fiction stories.

Let's look into the question of scientific hoaxes. You've heard of hoaxes in literature, journalism, religion, and other fields of human endeavor, but it's a little surprising to come across them in science. Especially if you think scientists are too

serious and upright to commit such sins.

However, there are scientists and "scientists." And authentic scientists, while mostly fine fellows, are not above human weakness. They may, for example, lend loud support to irrational doctrines outside the fields in which they are expert, and by giving aid and comfort to fakers, forgers, and hoaxers in those fields may in effect become their accomplices.

In fact, the trend of modern Western Civilization is towards more hoaxes of this kind. Where people a few centuries ago went in for religious hoaxes, the last two centuries' shift in interest towards science has led to a corresponding shift in the activities of the hoaxers.

Scientific hoaxes occur mostly in the following fields:

History and archeology. The faking of relics and manuscripts is an old and dishonorable art, still flourishing, and shading into straight literary forgery and the faking of antique furniture. However, there have been plenty of such fakeries of scientific purpose and effect.

For instance there was the deplorable case of the Würzburg fossils. About 1726 the students of Professor Beringer of the University of Würzburg made, and planted where they could be dug up, a lot of little clay tablets bearing pictures of insects, birds, stars, and other objects, and inscriptions in ancient languages like Hebrew. Now, the nature of fossils was a much-disputed question at the time. Beringer, convinced

that God had made fossils as a hoax to test men's faith, began to expound this theory in a huge illustrated treatise in Latin. Although the students, seeing that they had gone too far, confessed, the infatuated professor refused to believe them. When the book appeared it was greeted with shouts of scholarly laughter, and the disillusioned Beringer spent the rest of his fortune buying back the copies that had been sold and died brokenhearted.

Two centuries later an equal uproar was caused by the Glozel finds, a set of spurious archeological relics made by H. C. Rogers, a professional faker of antiques, and planted on a farm near Vichy, France. Before this hoax was exposed it had led to eccentric theories of European prehistory—as that the paleolithic cave men had known how to write—a libel suit, and a fine riot at a meeting of the College of France.

Or perhaps you prefer the wonderful "find" of the Russian journalist Nikolai Notovitch, who in 1887 discovered in Tibet the apocryphal "Unknown Life of Jesus Christ" which told of the alleged Indian tour of Jesus. Notovitch said that, while he was recovering from a broken leg at the Himis Monastery, the Chief Lama read the work to him. But when somebody else queried the Chief Lama, the latter said he had never heard of Notovitch and indignantly denounced the story as "Lies! Lies!" The nearest the Russian had ever come to convalescing from a broken leg at Himis was when he

was treated for toothache at the hospital in nearby Leh. These disclosures did not stop Notovitch from convincing all three of his wives that his find was the real McCoy, or the "Unknown Life"—last of a long line of pseudo-Biblical forgeries—from being reprinted as a great discovery in 1926.

Perhaps the most picturesque of the archeological hoaxes was the great Egyptian tomb-curse legend, floated by some enterprising journalist when the frail and overworked Lord Carnarvon died of pneumonia shortly after supervising the opening of King Tutankhamen's tomb in 1922. According to the story, the tomb bore the inscription: "Death shall come on swift wings to him that touches the tomb of the Pharaoh." For years thereafter, every time anybody connected with the Tutankhamen expedition died, newspapers told their shuddering readers that the "curse of the Pharaohs" had struck again. They're still at it, and no doubt will continue to be as long as any members of the party survive.

Actually, there was no such inscription. And moreover the archeologists lived, on the average, to a normal life-expectancy. In fact two of them, Kane and Lucas, died in 1945 at the age of seventy-nine.

Zoology. The singular behavior of animals has been a popular source of tall tales ever since Ug told his family how the mammoth took his spear away from him and tried to stick him with it. Nowadays we call

it "nature-faking," to use Theodore Roosevelt's term. This kind of writing is luckily less common now than a generation ago, when Kipling, Curwood, E. R. Burroughs, and many less-known writers described packs of wolves chasing muzhiks across the Siberian snows, snakes avenging their slain mates, gorillas kidnaping African women, and various beasts talking, rearing human children, sacrificing themselves for their young, and obeying the Ten Commandments or the Law of the Jungle or some such elaborate code, none of which happens in real life.

For instance, I recall in my boyhood reading in an early edition of the "Book of Knowledge" how whales are attacked by the orca or killer-whale, the thresher-shark, the swordfish, and the sawfish. Now, the first of these is true: orcas attacking whales have not only been seen by competent observers but also have been photographed in the act. As far as I can find out, though, there is not a word of truth to the accusation of balencide against the other three, despite the fact that an article a few years ago in *Esquire* perpetrated the myth of the swordfish's whale-sticking. The swordfish, like its cousin the tuna, eats small fish: why on earth should it bother a whale? As for the sawfish, this sluggish bottom-living relative of the skates uses its saw to dig from the mud the marine worms on which it feeds, and wouldn't dream of pestering a whale. Even assuming a sawfish can dream, which is unlikely.

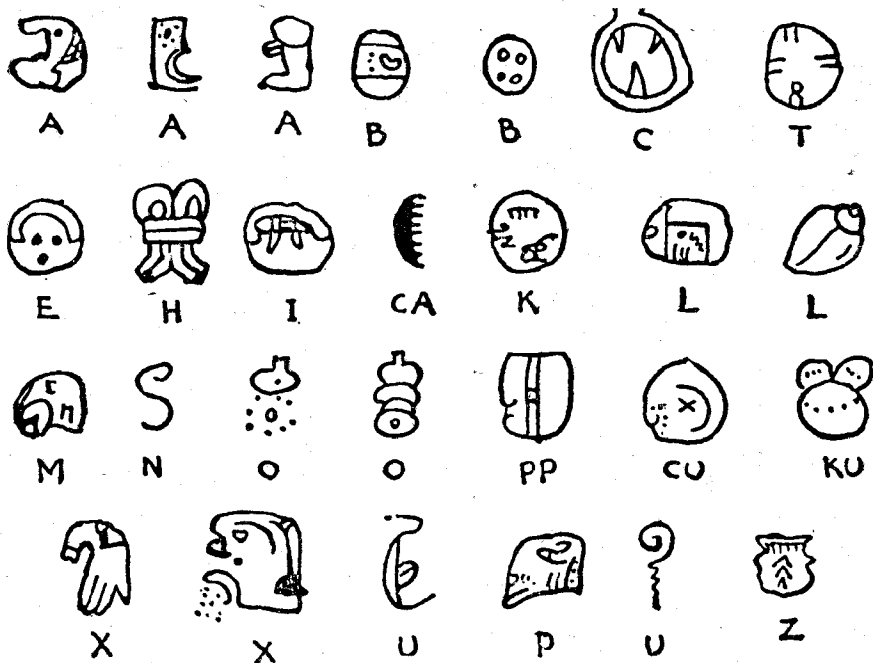


Fig. 1. The "Mayan alphabet" from Bishop Diego de Landa's "Relación de las Cosas de Yucatán" (Account of the Affairs of Yucatán). Note that the first "A" is the ideograph for aac, "turtle"—a picture of a turtle's head, facing right—and that the first "B" is the ideograph for be, "road"—a path with a human footprint upon it.

A similar widespread legend about land animals credits the elephant and the rhinoceros with mortal enmity; Pliny the Elder in the second century described the rhino as sharpening its horn on a rock in preparation for a duel with an elephant. And that tale, too, has come down to modern times.

Belief in such irrational enmities among life forms goes back, not to careful observation of animals in the wild, but to medieval and ancient beliefs that all natural things were connected by occult sympathies and antipathies. Medieval books of magic

consist largely of long lists of such relationships: the planet Jupiter hates Mars and loves the Sun; the olive tree hates harlots and loves the myrtle; and so on.

In the actual wild state, of course, duels like those between the elephant and the rhinoceros are almost unknown. (I don't mean when a rhinoceros is shot by a man riding an elephant, or when a Frank Buck forces two animals like a tiger and a python into a small inclosure and annoys them until they fight. Normally, animals are mainly concerned with eating without being eaten, and

usually avoid or ignore animals of other species that neither interest them as prey nor alarm them as possible preyers.

New devices. Never does the argument about the people who laughed at Columbus get a more thorough workout than when a man has a new and—he hopes—revolutionary gadget, whether to draw power from the moon's magnetism or to cure all the ills the flesh is heir to.

In the last century the gadget usually took the form of a perpetual-motion machine. Charles Redhoeffler ran a famous one without a visible source of power for many years in Philadelphia until Robert Fulton dropped in one day in 1831 and showed that the machine was run by a hidden belt, which led out of the demonstration room into a loft where an aged half-wit powered the device by turning a crank.

A few decades later Redhoeffler had a worthy successor in John W. Keely, who likewise demonstrated his machine in Philadelphia to sell stock in his company. His machine ran on "vibratory ether" atop a table without a visible power source. After Keely's death in 1898 it transpired that the "vibratory ether" was ordinary compressed air, cunningly piped up from the cellar through a leg of the table.

Nowadays we hear less about perpetual motion, not because more people understand the law of conservation of energy, but because they've

heard the term "perpetual-motion machine" said with a sneer until they have acquired a prejudice against it.

Medical quackery, of course, furnishes the richest field for the hoaxer, since millions suffer from painful, disabling, or incurable ills, and won't believe that regular physicians are doing for them all that can be done. Dr. Fishbein has done such a good job on pseudo-medical gadgets that I won't go very far into the subject, except to describe a couple.

One of the most versatile of these fakers was Albert Abrams—1864-1924—who started as a reputable M.D. in California. From 1910 on, however, his practice became more and more eccentric. About 1920 he cut loose from regular medicine altogether. He asked patients to send a drop of their blood on a piece of blotting paper, which he'd analyze in a "dynamizer" connected to the forehead of an assistant who faced east stripped to the waist in dim light. The operator tapped the assistant's belly and diagnosed the patient's disease from the resulting sounds.

Abrams then made another contraption called the "oscilloclast" which treated diseases by "vibrations" and which he leased to practitioners under a contract that forbade them to open the box. A box was opened anyway in the course of a lawsuit, and found to consist of a jumble of wires beginning and ending nowhere, which accomplished nothing save to electrocute a few pa-

tients when wrongly hooked up.

Although the A.M.A. repeatedly exposed Abrams—as by sending a drop of blood from a virtuous guinea pig and receiving a diagnosis of several human venereal diseases—he developed a magnificent scheme of quackery including an association, a magazine, a school, and traveling lecturers, and left over a million dollars.

And then there was Gaylord Wishire; a whiskery little man for whom Wilshire Boulevard in Los Angeles is named—he was a realtor as well as a quack. Wishire sold a “magnetic belt”, the Ionaco, which the sucker clasped about his middle and plugged into the nearest wall socket. He had a set speech in the course of which he’d wave a flashlight bulb near the belt, and when the bulb lit up by induction he’d argue: If the belt can light up this bulb, why not let it light up your life? Alas, he gave one lecture at the Los Angeles Philharmonic Auditorium, which generated its own direct current. Naturally the bulb failed to light; the lecture was a frost, and Wishire—who hadn’t known about a.c. and d.c.—hastily brought out a special model for users of direct current.

And Dinshah Ghadiali, who a few years ago was curing all by shining colored lights on his patients. . .

Border-land science. The gaudiest hoaxing is that having to do with the occult or, as some deem it more dignified to call it, the parapsychical

or extrasensory. Like the medium, Mme. Vesta of Boston, who let herself be securely bound to a chair in her spirit cabinet and left surrounded by musical instruments which played when the curtains were closed. She had a midget hidden in the bass drum, you see, whence he emerged by a trapdoor to play the instruments.

And like the professional mind readers and prestidigitators who have innumerable methods of getting a subject to write and seal up a question and then obtaining and reading the question without the subject’s knowledge. An envelope smeared with alcohol becomes transparent. Or the subject may be proffered a clip board to write on and allowed to keep the paper, unaware that the clip board included a sheet of carbon paper and a second sheet. Or the conjurer may collect question slips from the audience, seal them in an envelope, and hand the envelope to a sitter for safekeeping—having, in the sealing-process, poked a hole in the front of the envelope with his thumb, pushed half the slips through the hole, and put them in his pocket.

But maybe at this point we’re wandering off the reservation; should such tricks be considered “scientific” hoaxes? Perhaps and perhaps not, despite the fact that they have been investigated by scientists. In every case where the investigation went far enough, the investigators either satisfied themselves that the phenomena were all faked, or they ceased to be

scientific in their attitude, for reasons I'll discuss later.

In any case it's time to move on to the subject of *why* people commit such hoaxes.

Why do they do it?

For one thing, money. It is by such means, after all, that mediums and mind readers make their living. Ditto for inventors of oscilloclasts and magnetic belts. And ditto for professional liars like L. T. Stone, J. M. Mulholland, and C. L. Morrison, who for decades have amused the nation by sending the metropolitan newspapers stories about baked-apple trees, fur-bearing chickens, and a meteor that burned up Western Pennsylvania.

In considering the likelihood of a hoax, never underrate the motive of money. Many men will do things for money inconsistent with some stand they have taken or principle they have professed. Take Joseph Dunninger the mentalist. Some years ago he wrote a good book, "Inside the Medium's Cabinet," in which he vigorously exposed the chicanery of Spiritualist mediums. In this book he mentioned telepathy and clairvoyance as "possible" without claiming any such powers himself. Then, a few years later, he began high-pressure exploitation of these alleged powers, asserting that ever since boyhood he'd been able to read anybody's mind he chose with an accuracy undreamed-of in Rhine's more cautious experiments, and roaring threats and defiance at those

who doubted. (He kept away from the Duke University investigators, though.)

And the late Harry Houdini, an equally truculent foe of supernaturalism, was not above having H. P. Lovecraft ghost for him a short story, "Imprisoned with the Pharaohs," which not only exploits supernatural ideas but also is told as a straight autobiographical narrative as if it had really happened. The tale tells in Lovecraft's eldritch-horror style of Houdini's being seized by a gang of Arabs at night near the Sphinx, and lowered by rope far down a burial shaft. At the bottom he finds a horde of indescribable monstrosities performing unspeakable obscenities. I have corresponded with one reader at least who took the tale to be true!

Then, some perpetrate hoaxes mainly for fame. To this class belong many of the long series of literary forgeries, like W. H. Ireland's pseudo-Shakespearean play "Vortigern and Rowena." Perhaps the best case from a scientific point of view is the Schliemann hoax.

Heinrich Schliemann, you know, was a small nervous German businessman who, having made a pile of money, retired in the 1860s to devote the rest of his life to archeology. This he did with such success that he dug up ancient Troy and Mykenai and revolutionized the whole science. Well, he had a grandson, Dr. Paul Schliemann, who in 1912 got tired of being a little man with a big name and sold the New York

American an article, "How I Discovered Atlantis, the Source of All Civilization."

The younger Schliemann herein averred that his grandfather had left him a batch of papers on archeological matters and an owl-headed vase of ancient provenance. The envelope containing the papers bore a warning that it should only be opened by a member of Schliemann's family willing to devote his life to research into the subject of the papers. Paul Schliemann took the pledge and opened the envelope.

The first instruction was to break open the vase. Inside he found some square coins of platinum-aluminum-silver alloy, and a metal plate inscribed, in Phoenician: "Issued in the Temple of the Transparent Walls." Among his grandfather's notes he read an account of finding a large bronze vase on the site of Troy, in which were coins and other artifacts of metal, bone, and pottery. The vase and some of the objects were inscribed: "From the King Kronos of Atlantis."

Schliemann gushed: "You can imagine my excitement; here was the first material evidence of that great continent whose legend has lived for ages . . ."

He went on to advance the usual arguments, taken without credit from his predecessors Donnelly and Le Plongeon, for the cultures of the New and Old Worlds all having originated in Atlantis. Like Le Plongeon he claimed to have read the Troano Codex, one of the three

Mayan manuscripts that survived Bishop de Landa's book-burnings. (Moreover he read it in the British Museum, when it was actually in Madrid all the time.) The story of the dunking of Atlantis, or "Mu" as its natives called it, he corroborated by a four-thousand-year-old Chaldean manuscript from a Buddhist temple in Lhasa, Tibet—of all places—which told how the Land of the Seven Cities was destroyed by earthquake and eruption after the star Bel fell, while Mu, the priest of Ra, reminded the terrified people that he had warned them . . .

The story back of these ideas is a little complicated but not at all mysterious. It started with Diego de Landa who, after burning the Mayan books, acquired a belated interest in Mayan culture and undertook to learn the Mayan writing: a complicated system of ideographic signs compounded together with some phonetic elements to make complex word-glyphs, something like the system of modern Japanese writing. De Landa, however, assumed that Mayan, like the Spanish and Latin he knew, was written with a phonetic alphabet.

His method seems to have been to drag in some literate Maya, explain what he wanted, and bark: "*Qué es A?*" The poor Amerind, shaking in his sandals for fear of being burnt as a heretic, thought the terrible old man wanted the sign for *aac*, "turtle". Therefore he drew the ideograph, a turtle's head. "*Qué es B?*" Now, *be* in Mayan means

“road,” so the Maya drew the ideograph for “road”—a pair of parallel lines representing a path, and between them the outline of a human footprint. And so on through the alphabet until de Landa had twenty-seven signs and a few compounds, most of which, though, did not mean what he thought they did.

In the 1560s de Landa was recalled to Spain on charges of exceeding his authority. In preparing his defense—a successful one, I’m sorry to say—he wrote a great treatise on the Mayan civilization, “*Relación de las Cosas de Yucatán*,” wherein he set forth his “Mayan alphabet.” Unhappily the original of this work disappeared and has never been found though competently searched for.

However, in 1864 a diligent but erratic French scholar, the Abbé Brasseur, found an abridged copy of the “*Relación*” in the library of the Historical Academy of Madrid. Seeing the “Mayan alphabet” he was overjoyed, for he thought he had the Rosetta Stone, the key, to Mayan writing. He at once tried to read the Troano Codex by this alphabet with the help of an uncontrolled imagination. The result was an incoherent description of a volcanic catastrophe, beginning: “The master is he of the upheaved earth, the master of the calabash, the earth upheaved of the tawny beast—at the place engulfed beneath the floods—it is he, the master of the upheaved earth, of the swollen earth—”

Two symbols, faintly resembling the M and U of the Landa alphabet,

Brasseur—unable to account for them otherwise—took to be the name of the land submerged: *MU*. And that is the original, authentic, and only origin of the word “Mu”. (See the cuts.)

Discovery of the Landa alphabet caused a natural stir among historians and archeologists, followed by keen disappointment when they found that trying to read Mayan by this key resulted in sheer gibberish. However, by diligent work over the last seventy-five years, scholars have deciphered about a third of the Mayan characters. Hence it is now known that Brasseur’s translation was utterly wrong; that the Troano Codex is no description of an eruption, but a treatise on Mayan astrology.

While Ignatius Donnelly, the erudite American politician, was converting Atlantism into a popular cult in the United States, his contemporary Augustus Le Plongeon—1826-1908—was excavating Mayan ruins in Yucatán—where he long lived—being the first to do so. A sad-eyed French physician with a magnificent beard, Le Plongeon was an expert in his own odd way. But like Brasseur his critical sense failed to check or guide his soaring imagination.

From Brasseur’s Troano translation and from pictures on the walls of the ruins of Chichén-Itzá, Le Plongeon concocted the tale of the rivalry of the princes Coh—“Puma”—and Aac—“Turtle”—for the hand of their sister Móo, queen of Mu-At-

lantia. Although Puma won, he was murdered by Turtle, who conquered the country from M'oo. Then as the continent foundered M'oo fled to Egypt, where she built the Sphinx as a memorial to poor Puma and, under the name of Isis, founded the Egyptian civilizations. Other Muvians had meanwhile settled in Central America, where they became the Mayas.

Like Brasseur, Le Plongeon tried to read the Troano Codex. The result, if no more reliable, was at least more intelligible: "In the year 6 Kan, on the 11th Muluc in the month Zac, there occurred terrible earthquakes, which continued without interruption until the 13th Chuen. The country of the hills of mud, the land of Mu was sacrificed: being twice upheaved it suddenly disappeared during the night, the basin being continually shaken by the volcanic forces."

He also derived Freemasonry and the Metric System from the Mayas, asserted that the Greek alphabet was really a Mayan poem dealing with the sinking of Mu, and in one of his books printed a photograph of an Old-World leopard as an example of Central American fauna. As authorities he cited people like the London publisher John Taylor—"the learned English astronomer," Le Plongeon called him—and the eccentric Scottish astronomer Charles Piazzi Smith—"the well-known Egyptologist"—who between them founded the cult of pyramidology.

Which brings us back to Paul

Schliemann, since his release to the papers was merely an expansion on the mistaken ideas of Brasseur and Le Plongeon.

(Subsequently James Churchward, a small wraithlike Anglo-American who claimed to have been attacked by a flying snake in Central America, burst into print with his "Lost Continent of Mu"—1926—and the other Mu books. Therein he expanded the assertions of Le Plongeon and Schliemann still further, postulating two lost continents, Atlantis in the Atlantic and Mu in the Pacific. The idea of a Pacific continent he got from the speculations of Nineteenth Century scientists—Blandford, Griesbach, Sclater and Haeckel—about a former land-bridge from South Africa to India, and the revelations of a line of pseudo-scientific and occult writers—Jacolliot, Newbrough, Blavatsky, Oliver, Scott-Elliott—about a sunken continent in the Indian and/or the Pacific Oceans.

Schliemann promised to reveal the full story of his discoveries in a book that should Tell All. Alas, the book never appeared; nor were there any further revelations; nor did the owl-headed vase, the Chaldean manuscript, and the other priceless relics ever see the light of scientific investigation. The evident fact that the whole thing was a hoax has not stopped Atlantists from quoting the younger Schliemann as an authority, sometimes confusing him with his grandfather!

Besides the spurs of fame and fortune, men may commit hoaxes from simple fanaticism. That is, they will be so avid to see a question answered in a certain way that they will fake the results to prove what they want to see proved. Like the pyramidologist whom the archeologist Petrie once caught in the vestibule of the burial chamber of Khufu's Pyramid trying to file down a granite boss to the size required by his theory.

After all, scientific objectivity is hardly a normal state of the human mind. Instead it is one that most people never achieve at all and which even those who do can attain only by rigorous self-discipline. And, while fudging the results is the worst crime in the scientific calendar, there is reason to think some scientists have done it, even though rarely, under the influence of a strong emotional drive. How many Russian biologists nowadays have the rash courage to announce results that show Lysenko up as the charlatan he is? They remember what happened to Vavilov, who tried it and was jailed in Siberia, where he died in 1942.

To take a less tragic example, when about 1830 the great French physicist André Ampère lectured the Academy on the then little-known phenomenon of electricity, his demonstration required that at one point the needle of a meter should move. The time came. Nothing happened. In his eagerness Ampère gave the needle a push with his finger! Then,

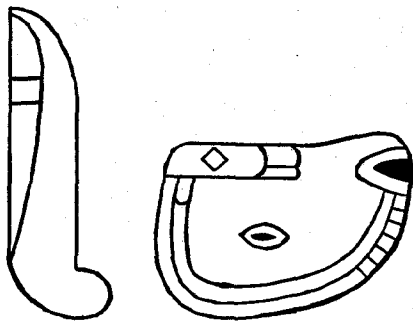
realizing what he had done, he excused himself and started over. On the second try the experiment worked and Ampère cried: "Ha! This time it moves itself!"

During the late war I witnessed a similar reaction. I was testing airplane accessories submitted to the United States Navy, which included a new windshield de-icer. The test consisted of spraying a mock windshield with water in a refrigerated room until the glass was coated with ice, and then starting the de-icer. Although the device hissed and clattered impressively, the ice remained intact until the inventor, unable to bear the suspense, smote it with his fist, breaking away a large piece but incidentally nullifying the test.

Fanaticism is particularly evident among scientists who have gone in for psychic research: such distinguished men as A. R. Wallace the biologist, Crookes and Lodge the physicists, and MacDougall the psychologist.

Now, it's a curious fact that after seventy years of work the various Societies for Psychical Research have accomplished only the following: they have solved the fire-walk mystery—simply a matter of rate of heat-conduction—and have exposed an army of mediums. But on the more fundamental questions of survival after death, spirit communication, extrasensory perception, and physical mediumship—ectoplasm, et cetera—they seem as far from final solutions as ever. Moreover the critical literature in the field seems to

Fig. 2. The original Mu: Two glyphs from the Troano Codex which the Abbé Brasseur de Bourbourg assumed to be identical with the letters M—left—and U—right—of the Landa “alphabet.”



have declined in both quantity and quality during the last thirty years, although the stream of sales-literature from mediums and Spiritualist churches continues in full spate. According to some critics, the S. P. R.'s have degenerated into mere Spiritualist clubs for the propagation of their faith and the indiscriminate defense of mediums against criticism or exposure.

The S.P.R.'s probably decline in stature because an active researcher, though he may start out objectively, is likely to decide sooner or later either that spooks exist and communicate through mediums, or that the whole thing is a matter of fraud, error, and pathology. In the latter case he'll probably lose interest, because there is not much fun in exposing one medium after another all your life.

On the other hand, if he decides he's dealing with real spirits, his

judgment is affected by the emotion of religious thrill, and he falls victim to what I call "spiritualitis". The symptoms of this malady are a tendency to sneer at the "limited range of view" and "dreary agnosticism" of unbelievers; to defend mediums as "men of high intelligence and probity" or "simple, honest, kind-hearted people" whose feats, even after exposure, "remain to this day absolutely inexplicable"; to blame exposures on evil spirits; and to assert sweepingly but untruthfully that "every trained observer" who has investigated the phenomena has either been converted "or has been forced to admit that the phenomena are at present wholly inexplicable."

Not a scientific view, obviously. And if you don't think spiritualitis affects trained scientists, consider Sir Oliver Lodge. After Harry Price exposed the spirit photographer William Hope in 1922, Lodge admitted that Hope had been discredited. Nevertheless, Lodge later forgot all about this exposure, wrote another researcher that he believed in Hope's "simplicity and honesty, now that he has been going on so long," and stated on a witness stand that "I hear about fraudulent mediums, but I have not come across them."

You see, even when fanaticism is not strong enough to make a man like Lodge commit fakery himself, it may sway him to condone, conceal, or shut his eyes to the acts of a real faker—which in the long run has the same effect as if he had committed the hoax himself. Only a few

years ago the psychologist Lee Steiner got a bawling out from a very prominent American psychical researcher because in her excellent book "Where Do People Take Their Troubles?" — 1945 — she had exposed the racketeering of mediums in the field of psychological counseling, and thereby hurt the feelings of the researcher because some of his best friends and strongest backers were mediums.

Lastly men may commit hoaxes simply for the sake of a good joke. To fool others is one of the most tempting ways of expanding your ego by proving your own superior cunning.

Fun was the motive of the celebrated moon hoax of 1835, when a reporter published in the *New York Sun* a story falsely credited to the *Edinburgh Journal of Science* telling how the astronomer Herschel, using a big new telescope, had obtained a close view of the moon and discovered trees, rivers, and a race of winged men. Fun again was the motive of one of my fellow-writers who, twenty-odd years ago, went to vast trouble to obtain some old paper, make old-style ink from oak galls, and forge therewith a deathbed statement by Thomas Paine wherein the anticlerical American patriot announced his conversion to Catholicism.

Personal eminence furnishes no evidence that a man is not a hoaxer. Ben Franklin, a first-rate scientist and one of the great men of all time, ran a story in the *Pennsylvania*

Gazette in 1730 telling of a fictitious outbreak of witch mania in New Jersey, with horrid details of the swimming tests given the suspects. In England he not only sent a newspaper an account of a whale's leaping up Niagara Falls in pursuit of cod, but also caused publication of a fictitious "Edict by the King of Prussia" wherein that monarch claimed the British throne on grounds of the German origin of the English.

And mind readers have no trouble getting prominent men — senators, generals, capitalists, et cetera — to act as their confederates on those committees that are supposed to watch the mentalist for trickery. As Juvenal said: "Who shall watch those watchmen?"

Thus fame, fortune, fanaticism, and fun, singly or in combination, provide ample motivation for hoaxes. But how are hoaxes set afloat and kept going?

First, there are the many cases of misunderstanding and deliberate fakery, of which I've already given examples. The complex Schliemann hoax shows how an original misunderstanding — by de Landa — reinforced by the fanaticism of later partisans — Brasseur and Le Plongeon — is used as part of a deliberate fake — by Schliemann — and then exploited by other fanatics and fakérs — Churchward, Ballard, et cetera — to expand their egos and fill their pockets.

There is also the general body of misconception and folklore which people draw upon, sometimes think-

ing it true. For example there's the old superstition that snakes suckle cows, which has led more than one American farmer to kill some poor "milk snake" that had come into his barn to hunt rats. A few days ago I heard of a further expansion of this myth: A prominent woman educator who went to Italy on the Town Hall of the Air international junket told a lecture-audience that snakes were suckling Italian peasant women! A snake can no more suck anything than a horse can play the fiddle, and for the same reason: it lacks the physical equipment—flexible lips et cetera.

Or take the common belief in premonitions. Nearly every notorious disaster brings out anecdotes to the effect that somebody foresaw it. In 1947 newspapers carried the story that just before the wreck of the Pennsylvania Railroad's *Red Arrow*, Pullman Conductor McCormick was warned by a hunch not to enter a Pullman car wherein six passengers were killed. Actually McCormick denied the tale, and no Pullman passengers died in this wreck. But as usual the denial never catches up with the original canard, and McCormick will no doubt be cited a century from now as an example of authentic seeing-through-time.

Then there are joke-stories like Astounding's pieces on thiotimoline and the Aphrodite Project. A joke of this kind, however funny, is not without its dangers because some people will believe *anything*—even Lovecraft's tale of Houdini's occult

highjinks under Pyramid Hill. Remember Orson Wells and the Martians.

For many years European newspapers observed the custom of publishing wild stories on April Fool's Day, which were sometimes reproduced in all seriousness by American papers. In the 1930s American newspapers, too, began to imitate this entertaining by scientifically distracting custom. Hence the story—with cuts—of a Viking ship found in Hawaii, printed in the Honolulu *Star-Bulletin* on April 1, 1936. This tale will no doubt turn up some day in a pseudo-scientific book as evidence that the Norsemen came from Mu.

And more recently the New York *Times* carried a hoax story about the attempt of the intrepid Oscar III, a tame octopus, to climb down from the surface of the Alaskan Gulf to the base of an underwater mountain.

As to the amazing longevity of hoaxes: There's a common type of mind that I call "credophilic" which gets positive pleasure from belief and pain from doubt. Such people are often fanatics as well, and vice versa; they are the folks who revive one crumbly old hoax after another, take it at face value, and nurse it along years after it has been exposed. The credophile collects beliefs the way a jackdaw does nest ornaments—not for utility but for glitter. And having once embraced a belief it takes something more than mere disproof to make him let go.

It does no good to argue with

such a man, as I learned years ago when I was in the patent-expert business and wasted an afternoon trying to show a young man why his perpetual-motion machine wouldn't work. I finally had to tell him—as the Patent Office does in such cases—to go make a model that worked and then come back. If you try to argue with Hippolytus O'Gomez about his Oyster-men of Ptui, for instance, he'll say: "Since it's admitted by Science that the Aztec pyramids are at least fifty thousand years old—"

"Hey!" you protest, "Science admits nothing of the sort," and give him good reasons why these pyramids must have been built within the last thousand years. O'Gomez looks at you blankly, changes the subject, and a few minutes later is back at the old stand:

"As you know, my dear young man, the Aztec pyramids are proved to be over fifty thousand years old—"

Besides the solemn credophiles who embrace and cherish hoaxes as a matter of temperament, a multitude of journalists and advertising copy writers find old hoaxes and exploded folk-beliefs useful copy when real news or inspiration fails them. Whatever the journalism courses may teach about accuracy, it's no secret that the newspaper profession includes many hard-boiled and convivial extraverts willing to break a leg—no matter whose—to sell their papers. Thus they cheerfully per-

petuate such fictions as the Egyptian tomb-curse legend, or H. L. Mencken's long-repudiated hoax about the invention of the bathtub in America in 1842.

Hence well-launched hoaxes are as hard to kill as Herakles' Hydra. Picked up by writers looking for lively copy and put into serious books, they finally find their way into standard works of reference. I've come across several in the latest edition of the "Britannica," including the whale-spearing swordfish.

In fact men have made a living and a reputation by cultivating such whoppers. The late Charles Fort assembled four volumes of rumor, misinformation, hoaxes, medieval folk-beliefs, and occasional curious facts. He threw these together with complete indiscriminatio and used them to back a furious and unscrupulous attack on all the "orthodox" astronomers from Kepler down, whom he accused of conspiring to put over the hoax of the Copernican system on the unsuspecting public.

Of course Fort had his own ax to grind: a geocentric cosmos, like that of Claudius Ptolemy, wherein a central earth is surrounded by a spherical membrane with little holes called stars, through which outer light shines; a sky full of undiscovered planets, spaceships, and floating continents something like James Whitcomb Riley's "flying islands of the night." Fort's fulminations and slanders were set forth with childish ignorance of elementary science. Thus he accepted the claims of Keely, the

perpetual-motion man, but rejected the Michelson-Morley experiment with light because the machinery was too complicated for him to understand. In trying to deny that the Solar System is drifting towards the constellation Hercules he confused an arithmetical sum with a vector sum, which is like saying that if you walk ten miles you're bound to end up ten miles from your starting point, regardless of whether you walked in a straight line.

Well, then, how do we avoid being taken in by hoaxes? There is no infallible method for spotting a hoax, no simple touchstone to tell true from false. But you can follow a few critical principles:

If you find startling and suspicious statements in a book, is the book one issued by a regular trade-book publisher, or by a vanity-publisher at the writer's expense? Has it an index and a bibliography? Not proof of reliability, but they tend to indicate a scholarly approach.

Does the writing make sense? Assuming that you're familiar with the terminology used in the field, and are a person of normal intelligence, there's a good chance that if the author can't express himself in language that can be understood he doesn't know what he's talking about himself.

What does your authority base his statements on, and what references does he give? If he says he's

found a Babylonian clay tablet in Arizona, where can this wonder be seen? How does Dr. O'Gomez *know* his pyramids are fifty thousand years old? As the mathematician Laplace long ago put it: "The weight of the evidence should be proportioned to the strangeness of the facts." And make sure that your author is not citing purely imaginary authorities; that's been done, too.

Does the author, other things being equal, adopt the simpler of two alternative explanations, at least tentatively? Again, not infallible, but a sound scientific method.

Or does he betray the stigmata of the pseudo-scientist and the magician by scorning "orthodox science," crying that he has been persecuted, or pretending to an exclusive or transcendental wisdom? He may be right in spite of these things, but in science we hold new theories guilty until proven innocent. It works better that way.

And take nobody—not even me—as the last word on anything, but check his statements whenever you can. You'd be surprised at the stuff that even some reputable publishers put out. When Joan Lowell's "Cradle of the Deep," supposedly the memoirs of a girl brought up on a windjammer, was exposed as the hoax of a young woman who had never been to sea in her life, did Messrs. Simon & Schuster commit hara-kiri, or were they chased up Fifth Avenue by a howling mob of infuriated readers? Not a bit!

THE END

BOOK REVIEW

"Worlds In Collision," by Immanuel Velikovsky. N. Y.: Macmillan, 1950, xiii + 401 pp., \$4.50.

The history of pseudo-science bears eloquent testimony to the lamentable fact that most men would rather be bunked than debunked. Instead of optimistic foolishness about "Truth, crushed to earth, shall rise again . . . But Error, wounded, writhes in pain . . ." the sententious Bryant should have written a piece on the recuperative powers of error, which surpass those of the Lemnaian Hydra. (The critter Herakles had such trouble to keep from regenerating heads as fast as he knocked them off.)

A branch of the man-eating shrub of pseudo-science concerns theories of periodical catastrophes overwhelming the earth. The concept—embodied in many primitive myths—was given temporary scientific standing in the early Nineteenth Century by Cuvier, who wanted to accept the implications of geological discoveries without jettisoning "Genesis." He assumed these catastrophes had destroyed all life at intervals, and that following each one God had started over with a new Creation. To explain the catastrophes, about 1850 one Adhemar reasoned that the accumulation of ice at

the poles made the earth unstable so that the polar axis suddenly rotated through ninety degrees, causing the oceans to slosh. Although the actual amount of ice is inadequate, this theory has led a ghostly existence ever since.

Then came the American scholar-politician Donnelly, in my friend Pratt's words a man of "extremely active mind, but possessing also that haste to form judgments and that lack of critical sense in testing them, which are often the result of self-education conducted by immense and unsystematic reading." (A good description of Velikovsky, too.) Donnelly's "Atlantis: The Antediluvian World," though wrong in nearly every assertion, made the lost continent of Atlantis into a popular and still thriving cult. His "Great Cryptogram" did the same for Baconianism, and in "Ragnarok" he argued that the world's formations of till are not the deposits of glaciers, as think the silly geologists, but the remains of a comet that once struck the earth, bringing on the Pleistocene ice age and wiping out all humanity except those on Atlantis.

Since then there have been others: Churchward, who in blithe defiance of the laws of geophysics explained the sinking of his imaginary land of

Mu by the collapse of "gas belts" beneath the earth; and Hörbiger, the Cosmic Ice man, whose superscrewball hypothesis of the capture by the earth of successive moons has been exposed in these pages by Willy Ley.

Despite the extraordinary ballyhoo the publisher has managed to stir up, Velikovsky's book is just one more head of this particular Hydra, save that the author's errors are even more flagrant and his nonsense even more transparent than in the case of his predecessors. According to Velikovsky, many centuries ago, as a result of a planetary collision, Jupiter erupted and spat out a comet. This comet, traveling in an eccentric orbit, skimmed the earth about 1600 or 1500 B.C., close enough to cause a worldwide catastrophe: earthquakes, tidal waves, a "rain of fire," et cetera. This grazing contact is remembered as the opening of the Red Sea in "Exodus" and as various other mythological convulsions.

Fifty-two years later this comet grazed the earth again, which debacle is remembered as Joshua's feat of commanding the sun to stand still. These approaches of the comet not only stopped the earth's rotation but started it spinning again in the opposite direction, changed the position of its poles and their inclination to the ecliptic, changed the earth's orbit so that the year was lengthened from three hundred sixty to three hundred sixty-five days, and exterminated the mammoth. The gaseous hydrocarbons of the comet's tail

showered down, partly as petroleum—whence modern oil wells—and partly as the sugary *manna* eaten by the Hebrews in Sinai.

The comet, having lost most of its tail, went on to graze Mars which, perturbed out of its course, also made destructively close approaches to the earth in the Eighth and Seventh centuries B.C. before settling into its present orbit. The comet meanwhile settled down to become—guess what?—the planet Venus!

To buttress this startling proposition Velikovsky has dug up mountains of ancient lore: the Babylonian three-hundred-sixty-day calendar; Hindu references to the "four planets"; and an immense mass of quotations from the myths of the Hebrews, Egyptians, Norse, Aztecs, and others. Where they don't fit he gives them the Prokrustes treatment; As Plato's sinking of Atlantis is dated nine thousand years before Solon's trip to Egypt—about 590 B.C.—Velikovsky fits the yarn into his framework by knocking a zero off Plato's figure and dunking Atlantis *nine hundred* years before Solon!

Why, if these events happened in historic times, don't the records describe them in clear language? Because, says Velikovsky, the human race suffered "collective amnesia." Mankind's subconscious was so terrified by these occurrences that it decided to forget all about them!

When a man propounds a theory of this kind he often tries to strengthen his position by decrying the "dogmatism" of "orthodox scientists,"

whom he accuses of treating him as the Inquisition did Galileo. Velikovsky, true to form, has done so in a recent interview. Now, is this objection sound? True, "orthodox science" has often been overturned, and Darwin and other scientific revolutionists have been unfairly denounced even though their ideas later proved correct.

However, we can't believe everything thrown at us in the name of revolutionary scientific discovery, or we should have to accept Cyrus Teed's hollow earth on whose *inside* he averred we live. We have to use some judgment. That means that when somebody claims that a group of phenomena like the movements of the planets, checked by hundreds of thousands of observations and measurements, are all wrong, we are entitled to scrutinize his claims pretty closely to see if he has made a reasonably good case and if he has accounted for the apparent success of the existing hypothesis he claims to have destroyed.

Well, Velikovsky has neither established his case nor accounted for the success of the Copernicus-Newton-Einstein picture of the cosmos. His mythological sources are partly wrong: For instance he uses the Brasseur "translation" of the Mayan Troano Codex—discredited for over fifty years—while his central heroes, Moses and Joshua, are as mythical as Herakles. For Hebrew history becomes authentic only about the time of Samuel, when the Hebrews learned to write.

The mythical catastrophes the author cites are mostly undated, and those that have dates refer to widely different times; to scramble them all together, as if they all referred to one or two events, is pure presumption. Many can be explained much more simply, without standing the Solar System on its head: Thus Plato's sunken Atlantis can be derived quite naturally from Thucydides' account of the inundation of the Greek island of Atalantë in 425 B.C.; from Homer's Scherië, the city of King Alkinoös in the "Odyssey"—probably the real Tartessos in Spain—from the Babylonian astrological theory of recurrent world-catastrophes; and so on.

Even if the author's mythological references were much sounder, they would still not prove his colliding-worlds supposition, because the corpus of recorded myth is so vast that you can find mythological references to back up any cosmological speculation you please.

Moreover the Babylonians left clear records of observations of Venus five thousand years ago, behaving just as it does now. References to a "four-planet system" probably mean that early astronomers overlooked Mercury, not a conspicuous object even at maximum elongation. The three-hundred-sixty-day year was simply a case of priestly inaccuracy, gradually corrected as knowledge grew.

Finally Velikovsky's theory is ridiculous from the point of view of

physics and mechanics—sciences with which the author does not seem acquainted. There is no reason to think that planets give birth to comets, and comets are not in the least like planets and do not evolve into planets. Comets are loose aggregations of meteors with—*selon* Dr. Robert S. Richardson—total masses less than a millionth that of the earth, or less than that of a cube of matter with the same average density as the earth and about sixty-five miles on an edge. Such a mass could perhaps devastate an area like Pennsylvania, but could not appreciably affect the earth's orbit, rotation, inclination, or other components of movement. If a mass big enough to reverse the earth's rotation hit the earth, the energy of the impact would completely melt both bodies;

if it didn't hit it wouldn't change the earth's rotation enough to matter.

As for the comet's tail, the gas of which it is composed is so attenuated that if the tail of a good-sized comet were compressed to the density of iron, I could put the whole thing in my brief case.

And as for "collective amnesia," that is like saying you're being followed by a little green man whom you can't see because he vanishes every time you turn your head to look for him. You can't very well disprove such an assertion, but neither are you obliged to take it very seriously.

And this farcical farrago of posterous amphigory is to be taken just as seriously as the little green man.

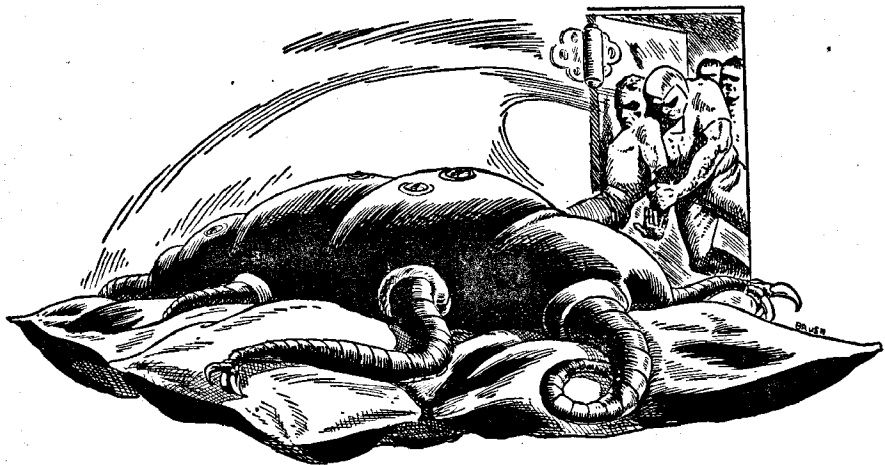
L. Sprague de Camp

IN TIMES TO COME

Next month's issue contains three items of particular interest. 1. Cartier does the cover—his first cover for Astounding SCIENCE FICTION. 2. L. Sprague de Camp's new novel, "The Hand of Zei," starts in that issue—Cartier's cover, naturally, being taken from that yarn. It's another of the Vishnu-Krishnan series, de Camp has been developing. This one about Igor Stein, Inc., Igor being composed of an explorer who can't lecture, an actor who can lecture but not explore, a ghost writer who thought he couldn't do either, and a variety of personnel. Unfortunately, the explorer is missing, and somebody's got to do something to protect the bread-and-butter . . .

Third, and of major interest, is L. Ron Hubbard's second article on dianetics—"The Analytical Mind." Anyone possessing one will, naturally, be interested. Dianetics is not simply a system of therapy; it is a science of the whole process of human thought. By this time, many a pre-clear has—I know from experience—begun to wonder if he ever does anything but "think with his engrams." Be assured; you do. But you'll find this article on how the analytical mind works fascinating whether you're in dianetics now or not!

THE EDITOR.



SPY SCARE

BY H. B. FYFE

A spy is always hard to find and convict — but when the spy's mind has been processed so he doesn't know he is . . . then he's really hard to find!

Lieutenant Shafer shouldered his way through the half-dozen prisoners and their guards as he entered the anteroom. He found the marshal sitting on the corner of a desk, scanning another report with tired eyes.

The lieutenant considered his own worry, and tried to imagine being responsible for an entire planetary system. Especially an outpost of the Federation, a target for neighborly conquest.

"Shut up, you!" he growled at one of the spy suspects who had muttered to a companion.

The marshal's calm gray eyes peered over the edge of the paper. His tanned, heavy-boned features betrayed no concern.

"Let them talk," he said tonelessly. "It won't make any difference." A meaningful jerk of Shafer's blond head caused him to rise and lead the way into his office, recently

commandeered from the Chief of Intelligence.

"New governor's on his way here," said Shafer tersely, as soon as they were in privacy. "They say he's direct from Sol. Landed this evening."

"Couldn't wait till morning?" murmured the marshal, glancing at the pair of wall clocks that showed both Federation Standard and Tanir IV time. "Is Stephens with him?"

"Yeah. Looks a little sour. Guess he expected to be governor after the Old Man stepped out that window . . . I think I hear them now!"

He slipped through the door, lithe and quick-moving despite his bulky, rather slovenly appearance. A moment later, he held it open to usher in Lieutenant governor Stephens—a tall, portly man nearly as dark-haired as the marshal—and their new superior. The gold braid in attendance seemed to have been shunted into a nearby lounge.

Governor Bronson was a gray-haired man, slightly pudgy and under middle height, who exuded a fatherly amiability. Shafer, catching a glimpse of blue ice behind the man's thick lids, decided that he must be a very shrewd specimen. Just the sort of politician who *would* be a territorial governor at some point in his career.

He measured Shafer briefly when the latter was introduced as the marshal's aide. The lieutenant tugged at his bulging pockets and tightened the zipper of his tunic as soon as he could escape attention.

After accepting a chair and a cigar, and wandering through a series of empty formalities in a mellow tenor, the governor finally backed up to the subject.

"They tell me, Marshal Mowrer, that you are having a . . . a spy scare, here in the Tanir system. I expect, however, to find that there is nothing much to it."

"I wish I could agree, your excellency."

"Really?" The governor permitted himself to look bored for an instant. "Well, suppose you give me the background."

"To begin with," said the marshal, "I hardly need to call attention to our situation in this planetary system. We are at the limit of the sector controlled by the Solarian Federation, and the planets of our nearest stellar neighbors are occupied by a certain Empire."

"Why not mention it by name?" asked the governor.

"A little trick to strengthen my objectivity. You see, we can't be sure that *they* are doing the spying!"

"No? Are you certain then that espionage exists?"

"Oh, we have even caught some of the agents," said the marshal, meeting Shafer's eye gloomily. "Caught some of them so completely that we have motion pictures of them searching forbidden files and so forth."

The governor leaned back in his chair and allowed his eye to wander from Mowrer to Stephens, and

back to the marshal. He squinted shrewdly through the smoke of his cigar.

"Come, now, Mowrer!" he said dryly. "If you *have* them, why are you . . . unable . . . to discover their employers? Surely you have adequate methods—?"

Shafer felt his fair skin flushing at the tone, but the marshal remained imperturbable.

"Of course we have methods! Psychological examiners, drugs, even a few gifted telepaths. Anything they know we can get at sooner or later."

"Well, then—?" The governor did not disguise his boredom.

"They themselves don't know!"

Shafer saw the lieutenant governor fidget uneasily, and realized that he had not had the will to explain things to his new superior. Bronson was staring at the marshal as if suspecting him of a joke.

"I am quite serious, your excellency. Their minds have been tampered with. Some form of hypnosis, or posthypnotic suggestion on an advanced level."

"Oh. I . . . see," said the governor, considering. He regained his blandness. "If you can detect that much, why can you not . . . probe deeper . . . into their minds?"

The marshal exchanged a glance with Shafer. Dark circles were becoming more obvious under his eyes. He leaned both elbows on his desk and slumped slightly, the only sign he had yet given of his exhaustion.

"Just how would you propose we

do that?" he asked finally. "The age of mind-reading—except to a limited extent—has not yet arrived."

"But, my dear man! You just said you knew their minds had been . . . altered."

"That is something we have deduced, rather than detected. It started some time ago:

"We had been noticing small leaks and accidents—missing or disarranged papers, personnel troubles, occurrences that foreshadowed the 'mishap' which was fatal to your excellency's predecessor."

The governor's graying eyebrows twitched, but Shafer's satisfaction was cut short by a light knock on the door at his back. He opened it a few inches.

A corporal handed him a message. Shafer scanned it, saw that it required no immediate action, and crammed it into a pocket.

"Tell them to bring Walker over," he murmured to the noncom. "We may want to question him."

The marshal was finishing his account as Shafer quietly reclosed the door.

"We made arrests, even secured some minor convictions, but real information—not a scrap! It has become obvious that if we let this go on, we can expect to be wiped out one fine day without ever seeing the hand that strikes the blow!"

"So *that* is why you are taking charge personally!" said the governor. "How do you manage to . . . apprehend these agents?"

Shafer interrupted in his heavy bass at the marshal's nod.

"Law of averages, sir. If we grab enough people, some of them are bound to be spies."

Bronson did not smile. He sat squinting patiently at Shafer over his cigar.

"Well, seriously then, they're always average-looking droops. They have local language and customs down pat. Even the ones we catch red-handed—far an' away from trying to alibi, they won't even believe we could possibly be arresting *them!*"

"We have methods I'd rather not publicize," said the marshal in his toneless voice, "but tell them about Tanir II."

Stephens frowned at the reticence. The new governor continued to squint at Shafer.

"We let it leak out," said the lieutenant, "that the second planet was the scene of extra-secret military preparations. Then we set up patrols in massive numbers, and plucked every tourist lured into that volume of space."

"That planet," explained Stephens, "is a steaming, swampy jungle. Even government ships have made few landings. I have to give you credit for that one, Mowrer."

"Get many?" asked the governor.

"More than had any business there," answered Shafer. "There are probably a few rubbernecks in the bunch, but they have only themselves to blame for being behind bars."

Governor Bronson exhaled a slow stream of smoke from between pursed lips.

"I trust," he murmured, examining his cigar interestedly, "that you people have not been . . . infringing . . . too far . . . upon legal liberties?"

Stephens denied the possibility with some heat, causing Shafer's lip to curl. The marshal sighed, looking as if he would like to yawn openly.

"Nobody's been hauled in for nothing," protested Shafer. "There's ground for suspicion in every case. But we've had to process them by a sort of mass production, and hope for results."

"But without obtaining any, I understand."

Shafer glanced at the marshal, but Mowrer's eyes were lowered. There was a silence.

"That," said the marshal after a few minutes, "gives some idea of the problem. We no longer show much 'profit' on the Tanir II patrol; the story seems to have leaked out. We have other operations, however. We collect quite a number of men and women each month, and examine them. Most of them we have to release."

"How do you examine them?" asked Bronson.

"Exhaustive questioning. Investigate their pasts and their friends. Psychological testing and attempts to trip them up. Truth drugs. Telepathists—such as they are—to try to read their minds. Even an 'anxiety field' to scare them."

"What is that?"

"Oh . . . sort of an artificial brain wave, you might say. It consists of electrically produced pulsations that are tuned to affect the thinking processes."

"How?"

"It seems to produce an anxiety . . . a fear . . . but something deeper than that. Our telepaths say it feels to them like one of their own kind trying to probe their thoughts."

"And does it?"

"No, it's not that practical yet. We like to let it give that impression."

He shrugged.

"They just don't know what they're doing," Shafer put in, "but we find out the most surprising unrelated skeletons. I could make myself rich just by looking up a few local politicians."

Both Stephens and Governor Bronson seemed to consider this a *faux pas*.

"With no results, marshal," inquired Bronson, "why do you still maintain a patrol around Tanir II?"

"We hope to pick up an occasional amateur. If his conditioning is so poor that he shows up *there*, he would be the kind of material we might cope with."

The governor leaned back and puffed out another stream of cigar smoke. He wagged his head contemptuously.

"I regret to say," he announced, "that I am . . . not persuaded. You are none too . . . specific . . . as to objects of espionage. You do not pretend to know the . . . instigators. You cannot even prove anyone

guilty of spying."

The marshal lifted one hand from the desk and propped his chin on his fist. His gray gaze met Shafer's glance for a long moment. Stephens attempted to smooth matters over.

"Of course, your excellency, we can't blame the marshal for being discreet. Some subjects should not be mentioned in such a large group, no matter who the four men are."

"I think, sir," said Shafer, "that you can guess the instigators—even though we can't accuse the Empire publicly."

"Besides," interrupted Mowrer, "we *have* proved guilt—*four times!*"

Bronson's little blue eyes opened rather more than halfway as he stared at the marshal.

"You have proved four different persons guilty?"

"Exactly."

"You didn't tell *me!*" exclaimed Stephens, flushing.

"Sorry. I've had no chance to confer with you."

"One moment!" said the governor, waving Stephens to silence. "If you have four convicted spies, I want to see them!"

"I'm sorry," said the marshal. "That is impossible."

"What do you mean?" He turned to Shafer. "Lieutenant, get those men in here!"

Shafer met the blue stare and shook his head.

"Lieutenant!"

"*They're dead,*" said Shafer flatly.

Bronson sat still, staring through

Shafer into the distance. He ground his cigar absent-mindedly in an ash-tray.

"Oh," he said, and leaned back.

After a moment, he spoke, his tenor tones bland once more.

"Perhaps I should not inquire too closely into your methods, Marshal Mowrer. I shall insist, however, that you convince me there is a definite danger upon which you base your actions."

"The best proof is to show you 'our methods,'" said the marshal, regarding him levelly. He cocked a gray eye at his aide.

"I have them standing by with Walker," Shafer told him.

"Have him in."

The lieutenant opened the door. He caught the eye of the corporal with the prisoner and gestured. The pair approached and entered, the corporal watchful, Walker handcuffed and aggrieved. Shafer accepted the records from the noncom and, at a nod from the marshal, handed them to Bronson.

"You will note," said Mowrer, "that this man has been subjected to an extremely thorough investigation. There would appear to be little reason to doubt his protestations of innocence—"

"I *am* innocent, general!" exclaimed Walker.

He was a slight, freckled redhead, who looked to be on the verge of hysteria.

"They won't believe me, general! I've told them all I know, and they

keep saying I did things I know I didn't."

Shafer laid a hand on his shoulder to quiet him, feeling embarrassed and, somehow, in the wrong. The marshal watched Bronson leaf through the record.

"You will also note there the account of cinematic evidence. We were far enough ahead of this one to plant a motion picture camera. I could show you shots of Walker breaking into a secret file and making photos of certain information, but it is hardly necessary."

Walker sobbed something about "fakes." The governor closed the folder deliberately, and turned his patient squint on the marshal.

Mowrer placed both hands on the edge of his desk and pushed himself slowly to his feet.

"We'll go over to the special wing," he said quietly.

Shafer nodded to the corporal, who slipped out and returned in a moment with two armed guards. The others, meanwhile, had risen to their feet. Walker peered at each, as if seeking a hint of what was in store for him. Stephens licked his lips uncomfortably.

Shafer led the way. Behind him came the guards with Walker, then the marshal and Bronson, with Stephens and the corporal following warily at the rear.

They tramped through a long hall, and took a cross corridor to which they were admitted by a pair of sentries. A key in Shafer's possession,

which he miraculously produced from a bulging pocket, unlocked a heavy door at the head of a descending flight of steps. Not far beyond the foot of these, they were halted by a quiet *clink*.

A somber eye peered at them through the peephole of a metal door. The portal presently swung noiselessly open to reveal a short hall guarded by several heavily armed men.

The sergeant who stood in the doorway behaved with a disregard for rank that outdid Shafer's. His muscular, rather lowering features were made bleaker by a black stare that was completely uncommunicative.

Slowly, he sauntered forward a few steps to scrutinize each face. For all the sign he gave of being one human encountering others of his kind, he might have been reading the titles of a row of cheap books. Finally, unable to discover satisfactory grounds for suspicion, he stood aside.

Shafer realized that he had been holding his breath again. He let it out carefully and advanced. A glance over his shoulder showed him that even the governor had become uneasy.

"What are you planning to show us, marshal?" he asked. "You just about had me convinced that no . . . human mind could solve this. I do trust you have no intention of resorting to . . . that is . . . I hardly care to be present—"

They had straggled into a little

group past the sentries where Shafer had paused at an unmarked door, having left the corporal back at the peephole. The marshal eyed Bronson wearily.

"It will be nothing that can damage your good name," he said, with a barely perceptible pause before the last two words which left the impression that he had been deliberately satirizing the governor's speech. "In fact, the only thing wrong is that it is damnably expensive."

"What do you mean?" asked the governor, flashing a glance at Stephens, who openly shrugged.

"Whatever has been done to him," murmured the marshal, staring analytically at the pale-faced Walker, "is, as you say, beyond the scope of a human mind to detect."

They all stared at him. The hard-faced sergeant had taken up a station behind Mowrer.

"But—that does not mean we can't hire it done!" continued the marshal.

Shafer turned the knob of the door, prepared to fling it open at the first signal. Mowrer looked from one to another. The sergeant seemed to be watching everyone at once.

"You might say, gentlemen, that we have imported a specialist. When we enter this room, prepare yourselves for a very odd experience."

"All of us?" whispered Stephens.

"Most of the attention will be centered upon Walker," said the marshal, "but there will be enough left over so that this being can sample the thoughts of all of us."

"Can't resist him," said Shafer.

"No. I only wish he didn't demand such a staggering fee."

He nodded to Shafer, who threw open the door and plunged into the room. The guards snapped their mouths shut and hauled Walker after him. As Mowrer and the sergeant stepped forward, the two officials perforce moved ahead of them.

Everybody froze, staring at the scaled, hulking *thing* that squatted on the pile of cushions across the room.

Shafer felt a wave of apprehension thrill through him. Knowing he had nothing to fear, he could no more ignore it than he could the rapid drop of an elevator. He glanced around.

They were still staring across the room. Stephens had turned a greenish white and was backing toward the door. He gasped and bounced forward when he touched the solid chest of the sergeant, who uncomplacingly filled the doorway.

The "specialist" regarded them cryptically with five eyes. More, on the back of his cheese-shaped head, were faintly reflected by the black, polished wall behind him.

He looked vaguely like a multi-limbed insect transformed into a muscular reptile and enthroned there on the cushioned dais. The extremity of one of his ten legs, a three-pronged travesty of a human hand, tapped idly on a pillow as he stared intently at the men.

Most of their faces, Shafer noted, looked as if they felt their minds

were being turned inside out. The marshal stepped forward to Walker's side.

"Check this one's mind!" he ordered, a note of emotion creeping at last into his voice.

He's feeling it too, thought Shafer, trying to relax the tightening muscles in his back. *Wonder if I'm keeping as straight a face as he is?*

Walker was not, he saw, nor were the guards and the two officials. The sergeant was, but then—he stood an inch or two outside the door. Shafer felt superior.

The prisoner uttered a gulping sob. He whirled to run, but encountered his guards.

Shafer moved forward. Walker's mouth began to twitch and work uncontrollably. The lieutenant saw an expression of detached, horrified wonder creep into the man's eyes. Walker grimaced violently and swallowed.

"*Stop him!*" Shafer yelled, leaping forward.

He grabbed Walker's chin on one big hand—*Too late—*

The redhead went limp. His knees buckled and he slid down the side of the guard who had been holding him.

Shafer stepped back, feeling sweat on his forehead.

"I'm sorry, sir," he gasped hoarsely. "He must have had it in a tooth!"

His words were echoed by a sodden thump. He pivoted to follow the marshal's surprised gaze, and saw

Governor Bronson roll slowly over on his back.

The little eyes still squinted, but there was no glint left in the blue ice behind the lids. On the heel of the governor's outflung right hand, a sliver of glass or thin metal gleamed in a jagged, bleeding cut. A streak of blood at the corner of Bronson's mouth betrayed the source of the wound.

"Well!" exclaimed the marshal. "I hadn't expected *that!*"

Shafer fidgeted, and waved abruptly to the guards to carry Walker out. The being on the cushions watched imperturbably, not visibly disturbed by the occurrence.

The sergeant stepped around the guards and their burden, glanced at Shafer for approval, and grasped the governor's body under the armpits. He backed with it toward the hall.

"Be sure to close the door, sergeant!" Mowrer choked out.

Shafer, eyes glued longingly on the door, shivered with fear and reached out to hold Stephens inside the room.

The sergeant yanked Bronson's limp feet clear and slammed the door.

Instantly, a wave of relief washed through Shafer's body. He dangled both arms at his sides and let his head roll back loosely. Someone sucked in a long, uneven breath. He heard Stephens, next to him, patting a handkerchief roughly on his forehead.

"What happened to them?" the

lieutenant governor asked weakly.

"It looks," said Shafer, "as if your new boss was one of *them*."

"I saw him bite at his hand," Stephens said, "and then—"

"Poison. I'm sorry, marshal. One of these times, we'll spot it."

"It's all right," said Mowrer. "Some of them used other ways."

He was obviously near exhaustion. The lines about his mouth had a slack look.

"How can we trust *anybody?*?" whispered Stephens.

"Oh . . . we can trust each other," said the marshal huskily.

"But how?"

"Because—I'm not joking—simply because we're alive."

"What?"

"Listen," Shafer broke in. "Anybody smart enough to put a twist like *that*"—he jerked his head toward the hall—"in a human brain is also smart enough to prepare an out, just in case we ever got close to untwisting it!"

"You mean, they were conditioned to destroy themselves if they knew they were breaking down?"

"That was our opening," said the marshal. "The real problem was to *convince* them—subconsciously, I suppose—that we had what it took to break them. Consciously, they could not remember their missions at all."

"It's like looking across the poker table at a masked player," said Shafer. "You don't see him draw any cards, and you wonder if you should stand pat too."

"And you still don't know who

sent them?" Stephens asked the marshal.

"Well . . . we can't *prove* it, let us say. As Shafer says, one of these times we'll catch one of them before he throws in his hand; and then we'll see . . . we'll see—"

Stephens stared about him, apparently having a hard time absorbing the situation. He brightened suddenly.

"Why don't you ask your friend there? Maybe he caught something before they died!"

The marshal turned his head to look at the monster on the cushions.

"Ah, yes," he murmured meditatively.

He extended an open hand to Shafer. The lieutenant dug into one of his bulging pockets and handed the marshal an apple.

"You mustn't blame my little joker here for what you felt,

Stephens." The marshal walked slowly to the dais. "That was just a stepped-up anxiety field, you know. The door is the switch. It doesn't do much by itself, but it adds to the atmosphere."

He tossed the apple. The monster raised itself slightly. There was a gleam of clinking metal links among the cushions. One big "hand" plucked the apple from the air. It was conveyed to a cruel slot of a mouth that crunched upon it immediately.

"Some of my men scouting Tanir II," said the marshal, "found *this* climbing around the jungle. A little intimidation in the right spot is a powerful convincer."

He started for the door, and they followed.

"If," added Shafer as Stephens looked back, "you can fix it so the scare reaches the right spot."

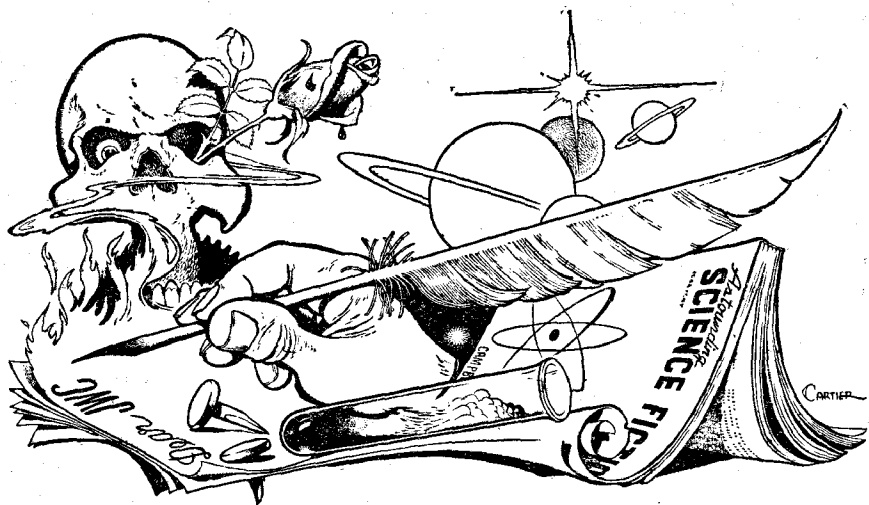
THE END

"VANADIUM: Trace amounts present . . ."

Vanadium, most familiar as the second word in "chrome-vanadium steel," is an important alloying element. The Colorado Plateau ores have been worked for vanadium for some years—with the rubble of rock and unwanted elements such as uranium dumped.

There is a group of marine creatures which uses vanadium—of all elements!—in their oxygen-carrying metabolism, as land animals use iron, and some sea creatures use copper.

Now it happens that vanadium has high neutron-absorbing powers; it is most extremely undesirable in any material used in a uranium nuclear reactor, therefore. Uranium and vanadium occur together in nature very generally; the vanadium has to be separated with elaborate, finicky care, or the nuclear reactor won't function. And worse, the graphite used in nuclear reactors is usually made by starting with petroleum. That's where the marine creatures with a penchant for vanadium get in. They concentrated the stuff, a few megayears back, from sea water. They died; their remains became petroleum. And since there is immensely more graphite in a nuclear pile than there is uranium . . . Why couldn't the creatures be satisfied with some less obnoxious element!



BRASS TACKS

Dear Mr. Campbell:

First a bow to the front row: I think your magazine is the best by far in the science fiction field, and I *don't* read them all. On rare occasions I pick up one of the others, but they usually make me slightly sick.

But now to the business at hand. I feel compelled to write because a number of your recent stories have dealt with a consequence of the special theory of Relativity which seems somewhat paradoxical to me. I refer, of course, to the slowing down of clocks which are in motion with respect to the observer, a human life-cycle being a crude form of clock. As a result of the Lorentz transformation, the clocks aboard a spaceship would be slowed down relative to observers on Earth, but also clocks

on Earth would be slowed down relative to observers on the ship. So how is it that when the ship gets back to Earth, everyone agrees that those who have been on the ship have not aged as much as those who remained at home.

Very full use is made of that agreement in Hubbard's "To The Stars". Below I have worked out some approximate quantitative results based on the Lorentz transformation and the Lorentz-Fitzgerald contraction. They may satisfy some skeptics, but they don't clear up this paradox for me. Perhaps you will soon have an article which will explain the meaning of relativity for space travelers. I'm looking forward to seeing it in an early issue.

Your readers can catch up to

where this starts by consulting one of the popular books on relativity. (Some of which have probably been written by others of your readers.)

Suppose we consider a co-ordinate system K with its origin at Earth and its x-axis in the direction of travel of our spaceship, and a system K' with its origin at the ship and its x'-axis in the same direction. If the ship is moving with constant velocity v and we call time zero when the ship is at Earth, then by the Lorentz transformation:

$$\left. \begin{aligned} x' &= \frac{x - vt}{\sqrt{1 - b^2}} \\ t' &= \frac{t - \frac{vx}{c^2}}{\sqrt{1 - b^2}} \end{aligned} \right\} \text{and} \left\{ \begin{aligned} x &= \frac{x' + vt'}{\sqrt{1 - b^2}} \\ t &= \frac{t' + \frac{vx'}{c^2}}{\sqrt{1 - b^2}} \end{aligned} \right.$$

where c = velocity of light, $b = v/c$, x' is distance measured by observers on ship along their x' -axis from the ship as origin, t' is ship time measured from beginning of trip, and x and t are the corresponding quantities for observers on Earth. If an event occurs at position x' and time t' as seen from the ship, it occurs at position x and time t as seen from Earth. As a consequence of these equations we get the Lorentz-Fitzgerald contraction. If an object at rest with respect to K has a length L in the x -direction, it will seem to have a length $L' = L(1 - b^2)^{1/2}$ to observers in the ship. Conversely, if the ship is of length L' it will seem to observers on Earth to be of length $L = L'(1 - b^2)^{1/2}$.

If we differentiate the equations

of the Lorentz transformation, we get the following equations, which we may consider approximately true even though v is not constant:

$$\left. \begin{aligned} dx' &= \frac{dx - v dt}{\sqrt{1 - b^2}} \\ dt' &= \frac{dt - \frac{v dx}{c^2}}{\sqrt{1 - b^2}} \end{aligned} \right\} \left(\begin{aligned} dx &= \frac{dx' + v dt'}{\sqrt{1 - b^2}} \\ dt &= \frac{dt' + \frac{v dx'}{c^2}}{\sqrt{1 - b^2}} \end{aligned} \right) \quad (1)$$

Consider now subjective time t' as the independent variable. Suppose the ship is driving forward with a force which gave it an acceleration a as it left Earth. Then at time t' , K' and the ship are moving with velocity v along the x -axis of K. The ship has velocity zero relative to K' . At the time $t' + dt'$ the ship has velocity zero relative to a system which may be called $K' + dk'$. But relative to K' it has the velocity $dv' = adt'$ and relative to K it has the velocity $v + dv$. Hence $v + dv = dx/dt$ and by (1)

$$v + dv = \frac{dx' + v dt'}{dt' + \frac{v dx'}{c^2}} = \frac{\frac{dx'}{dt'} + v}{1 + \frac{v}{c^2} \frac{dx'}{dt'}}$$

but since dx'/dt' is the velocity relative to K' ,

$$v + dv = \frac{dv' + v}{1 + \frac{v dv'}{c^2}}$$

Expand the denominator by the binomial theorem and neglect infinitesimals of higher order than the first. Then

$$\begin{aligned}
 v + dv &= (v + dv') \left(1 - \frac{v dv'}{c^2} + \dots\right) \\
 &= v + \left(1 - \frac{v^2}{c^2}\right) dv' + \dots \\
 dv &= \left(1 - \frac{v^2}{c^2}\right) dv' = \left(1 - \frac{v^2}{c^2}\right) a dt' \\
 \frac{dv}{1 - \frac{v^2}{c^2}} &= a dt'
 \end{aligned}$$

Integrating from zero to t'

$$\tanh^{-1} \frac{v}{c} = \frac{a}{c} t' \quad \text{or} \quad v = c \tanh \frac{at'}{c}$$

Since $dx' = dt' dv'$, (1) gives

$$dx = \frac{v dt'}{\sqrt{1 - \frac{v^2}{c^2}}} \quad dt = \frac{dt'}{\sqrt{1 - \frac{v^2}{c^2}}}$$

if we neglect second order infinitesimals. Hence we can find x and t as functions of t'

$$dx = \frac{c \tanh \frac{at'}{c} dt'}{\sqrt{1 - \tanh^2 \frac{at'}{c}}}$$

$$dt = \frac{dt'}{\sqrt{1 - \tanh^2 \frac{at'}{c}}}$$

$$dx = \frac{c \frac{\sinh \frac{at'}{c}}{\cosh \frac{at'}{c}} dt'}{1} \quad dt = \frac{dt'}{\cosh \frac{at'}{c}}$$

$$dx = c \sinh \frac{at'}{c} dt' \quad dt = \cosh \frac{at'}{c} dt'$$

Integrating both of these from zero to t'

$$\begin{aligned}
 x &= \frac{c^2}{a} (\cosh \frac{at'}{c} - 1) \quad t = \frac{c}{a} \sinh \frac{at'}{c} \\
 \frac{ax}{c^2} + 1 &= \cosh \frac{at'}{c} \quad \frac{at'}{c} = \sinh \frac{at'}{c}
 \end{aligned}$$

The next few calculations are included to show that these equations are consistent with the idea that c is a limiting velocity. From $\cosh^2 u - \sinh^2 u = 1$ we see that

$$\frac{a^2 x^2}{c^4} + \frac{2ax}{c^2} + 1 - \frac{a^2 t^2}{c^2} = 1$$

$$\frac{ax^2}{c^2} + 2x - at^2 = 0$$

But since $x = 0$ when $t = 0$ we must take the plus sign in the solution of this quadratic by the formula.

$$x = \frac{-1 + \sqrt{1 + \frac{a^2 t^2}{c^2}}}{\frac{a}{c^2}} \quad (2)$$

From the Lorentz-Fitzgerald contraction we see that the subjective distance traveled, call it X' , at subjective time t' is

$$X' = \frac{c^2}{a} (\cosh \frac{at'}{c} - 1) \frac{1}{\cosh \frac{at'}{c}} = \frac{c^2}{a} \left(1 - \frac{1}{\cosh \frac{at'}{c}}\right) \quad (3)$$

Since the velocity at all times is less than that which would be expected on the basis of Newtonian mechanics, x as given by (2) must be less than $(at^2)/2$ and X' as given by (3) must be less than $(at'^2)/2$. A little calculation and examination of tables of hyperbolic functions will

show that this is actually the case, the discrepancy becoming more marked as time goes on, as is to be expected. From a hasty glance at (3) it may even seem that the harder we try the more we are limited in the extent of our trip since the X' is c^2/a . However, it must be remembered that this is the subjective distance, whereas the objective distance covered is $x = (c^2/a) (\cosh at'/c - 1)$, which shows that after an appreciable length of subjective time the objective distance covered becomes greater than that which would be expected following Newton.

To figure out some pertinent information about space travel we need these equations:

$$x = \frac{c^2}{a} (\cosh \frac{at'}{c} - 1) \quad t = \frac{c}{a} \sinh \frac{at'}{c}$$

Suppose now that the maximum acceleration which man can take continuously is five Gs or say about five light-years per year per year—figure it out, it comes pretty close to five. This seems plausible since pilots black out at about nine Gs in pulling out of power dives. And suppose we have ships capable of this sustained acceleration. Then to figure out the time for a round trip to a star, find the time needed to go halfway according to our equations and multiply by four. With $a = 5$ and $c = 1$ the equations become

$$x = \frac{1}{5} (\cosh 5t' - 1) \quad t = \frac{1}{5} \sinh 5t'$$

where x is in light-years and t and t'

are in years. With these equations and a table of functions, we get the following table:

Distance to star in light years	Round trip time in years (approx.)	
	Subjective time	Objective time
4 (Alpha Centauri)	2.48	8.9
20	3.68	40.8
100	4.97	201
5,000 (Width of galaxy)	8.1	10,000
300,000 (Length of galaxy)	11.4	600,000

On the basis of these figures I feel justified in making a few objections to technical aspects of Mr. Hubbard's excellent story. Unless some provision is made to enable the crew to withstand tremendous accelerations, no trip to a star will be made in a few weeks or months. There is no need for "check Blasting"; the ship will never reach constant, no matter how hard it is kicked forward. There should be no desire to hold back. If you take a trip of say one hundred light-years, everyone you knew on Earth will be dead when you get back. The only consequence of not kicking the ship right along is that you'll be dead too, if you dawdle. And as for the photon speedometer; don't, please don't use relativity and then say that the speed of light depends on our state of motion through the ether.—Millard H. Perstein, 233 Stanyan Street, San Francisco, California.

A very fine and much appreciated analysis. I'll let math sharks check or quarrel with his math!

Dear Mr. Campbell:

After reading "Ergodic Prediction" in the February ASF, I decided to make a set of cards like those described. I thought you might be interested in the final results. The set consists of three groups of eight cards each; subject entities, operators, and object entities.

The subject entities are: (1) Certain well-known political leaders. (2) Leaders of a certain racial group. (3) Capitalist influences. (4) Certain religious organizations. (5) Left-wing labor leaders. (6) Certain high government officials. (7) Foreign-born elements of the population. (8) Foreigners high in diplomatic circles.

The operators are: (1) are reported to be friendly to; (2) are attempting to undermine; (3) are dangerous to; (4) are in agreement with; (5) are upholding; (6) are working against; (7) are unfriendly toward; (8) are secretly destroying.

The object entities are: (1) our foreign policy; (2) the American way of life; (3) democratic government; (4) freedom and democracy; (5) U.N. attempts at world peace; (6) atomic security; (7) the two-party system; (8) the constitutional guarantees of freedom.

Any combination of cards, one from each group, will form a propaganda statement. There are 512 possible statements, of which 320 are unfavorable, and 192 are favorable. As you can see, the third list is just a group of sacred cows, and the sec-

ond list is a set of relationships. The first set proved a little difficult, because there were certain restrictions on its contents. Since it was intended that any possible combination would be a reasonable statement, certain things couldn't be put into it. For instance, my first listing contained "subversive elements". Since this wouldn't work with the favorable operators, it had to be removed.

A machine to do this work would be somewhat different in principle from a simple probability set-up like the cards. Some arrangement would have to be made so that the output would be all favorable or unfavorable, as desired. Also, entirely illogical connections would have to be avoided, although there are wide limits to the "logic" of propaganda. Anyway, it's an interesting idea.—Joseph Paul Martino, Fisher Hall, Miami University, Oxford, Ohio.

Anybody else try it?

Dear Campbell:

The hydrogen-lithium bomb has been mentioned several times in recent months, in *Astounding* and elsewhere. The people who know whether the thing will work or not are not permitted to say, but your readers might be interested in what can be figured out about the bomb from general physical information.

The hydrogen-lithium bomb would be simply the largest convenient mass of some mixture or compounds

of the two elements. A heavy metal atomic bomb would be used to heat a small portion of the mixture to a temperature so high that the hydrogen nuclei, or protons, would have an energy of about 0.2 million electron volts (MEV). An average proton of this energy would hit and combine with a lithium nucleus in about 0.01 microseconds, causing the lithium nucleus to split into two helium nuclei and about 17 MEV of energy. This energy will heat several more atoms to the ignition temperature and the reaction will spread rapidly through the mass until it is all converted to helium.

It is not questioned that a lithium-hydrogen mass would explode with great violence if it were brought to its combustion temperature. The theory on this has been elaborately worked out in an effort to explain some types of exploding stars. The only question is whether a heavy metal bomb reaches a high enough temperature to ignite the mass. Uranium releases in the form of heat about 150 MEV per fission. Even after making generous allowances for the low percentage of uranium atoms actually fissioned, loss of heat by radiation, and so forth, this is enough energy to heat a considerable region to the energy of 0.2 MEV per particle required to start the lithium reaction. Furthermore, the temperature reached could be increased if necessary by using more uranium or by some other methods.

The power of a U-235 or plutonium bomb is limited by the fan-

tastic cost of the metal and by difficulty in assembling it quickly at the moment of explosion. The amount of metal actually fissioned in the bombs dropped on Japan was about one pound. The size and power of the lithium bomb is limited only by the maximum weight which can be carried. For a ship or submarine this is a few thousand tons. The efficiency of the lithium bomb would be practically perfect because its great bulk could not disperse before the reaction is complete. Also, considerably more energy per pound is obtained from this reaction than from uranium. The total release of energy would be around ten million times that obtained from the usual heavy metal bomb and of the same order of magnitude as the energy released in the greatest natural earthquakes and volcanic eruptions. It would be released very much more quickly than any natural force and would have correspondingly more disastrous results.

Such a bomb is not very useful in an airplane due to the small weight which could be carried and the tendency of the flash to dissipate into space. To get the full benefit of the increased power the bomb should be fired on the ocean floor in the deepest water available, perhaps two or three hundred miles out. The terrific pressure would throw up a mile-high tidal wave which would carry complete destruction for hundreds of miles inland, and the earthquake and airborne shock wave should destroy all buildings within a radius of about

two thousand miles.

There may be a good reason why the lithium bomb will not work at all. If any reader knows one, I should certainly like to hear about it. If not, I would like to hear about an engineering job in Central Africa or perhaps the Australian desert.—W. H. Clark, Box 303, Dorm IV, Texas Tech College, Lubbock, Texas.

Then there is also the even more energetic thermonuclear reaction of heavy hydrogen (deuterium) —
 ${}_1\text{D}^2 + {}_1\text{D}^2 \rightarrow {}_2\text{He}^4 \text{ or } {}_2\text{He}^3 + {}_0\text{N}^1$
or ${}_1\text{H}^3 + {}_1\text{p}^1$.

Dear Mr. Campbell
and writer L. Ron Hubbard:

Good news for Captain Jocelyn, worried Alan Corday, and the crew of the *Hound!* Things are not as bad as they seem. Simple arithmetic soon proves that after a six-week round trip at 94% of the speed of light, (about 174,900 mi/sec.) the crew would find their Earth-bound friends only 17.5 weeks older than at departure time—NOT the nine years Captain Jocelyn imagines.

To pass six weeks on the ship while Earth enjoyed nine years, the *Hound* would have to rocket through space remarkably close to 99.992% of the speed of light!!

The given equation,

$$T_v = T_o \sqrt{1 - \frac{V^2}{C^2}}$$

still holds. If the proper values are substituted, however, it is easily seen

that at the given velocity—94% of light—the time ratio

$$\frac{T_v}{T_o}$$

is only .342 instead of .0128 as Captain Jocelyn and Mr. Corday apparently believe.

Jocelyn may be excused the error, for he has lived considerably longer than one would expect—even at high velocities—and slide-rule errors may be forgiven the aged.

Alan Corday, with his Tenth-class education, should certainly have known better. But true love is too beautiful and rare to waste on mathematics and Alan may return to his still young sweetheart, Chica, with joy in his heart and our blessings.—Albert Sevcik (MIT '52); Richard Wingerson (MIT '52), Box 476, Bldg. 22, M. I. T., Cambridge, Massachusetts.

Gentlemen, you overlook something.

Successive measurements of the speed of light over several decades show that light is slowing down. Evidently in Jocelyn's time it had slowed considerably! (Now: is it that wiggle satisfactory, or must I confess to slipstick slipping?)

Dear Mr. Campbell:

Although I agree with the generally-valid aspects of your statements in the Feb. Analytical Lab (“... there simply doesn't seem to be any fair, self-consistent way of comparing scores from issue to is-

sue." Man has not been notably successful as a mechanical critic, in the qualitative analysis of his judgments, being at the mercy of his environmental distractions, his memorial limitations—and his digestion), I find it difficult to accept your following statement ("The story you just read always has a stronger impression in your mind than the story you read three months back.") if only because of that "always." So all-inclusive that.

But passing over that technicality and taking your "three months back" literally, it is my impression that both "The Witches Of Karres" and the second part of ". . . And Now You Don't" exceeded in quality the novelettes and shorts of this, the March issue. The passage of three months has in no manner dimmed the luster of their regality. Yes, three years' retrospect may modify the extent of this enthusiasm and will doubtlessly obscure the elements—but not the memory of the initial impressions.

Looking at "three months" figuratively, take Van Vogt and Doc Smith as examples. Van Vogt is by far the most popular science fiction writer with local fans, but not so much for his stories of the past three months or three years. The foundation of his popularity seems to lie in the years preceding 1946. And who would remember Doc Smith who turns out a story every three or four years if the readers had those three-month memories to which you refer? (Who would remember Don

A. Stuart for that matter?)

Another example is Shiras' "New Foundations." Her first two stories were in nearly every respect outstanding efforts. This one dipped a bit—more than a bit—in the scale for me. It lacks the suspense, the symmetry in plot development, the strength in characterization of its predecessors even though the fundamental theme still carries its original impact. It's not that I have tired of the series, it's simply a matter of smaller dividends resulting from smaller investments. As a transitional episode it is quite satisfactory.

Hubbard's conclusion for "To The Stars" is quite another matter. At first glance it seemed that Part One was merely a prologue, so powerful by comparison was the conclusion. But in retrospect—a very short retrospect, true—the parts fit very well together, producing a whole of pre-eminent worthiness. And because of its smoothness in delineation, its excellence in characterization and mood, its solidity of ideas, I do not hesitate, even at this short range, to classify it as good literature as well as excellent science fiction, deserving the posterity of a hard-cover publication. (Yes, that goes for 1953, too!)—William N. Austin, The Wolf Den Book Shop, 724 Pike Street, Seattle 1, Washington.

You win! Delete "always" and make it "tends to have"!

Mr. Campbell:

You have gone and loused up my

favorite magazine again.

With very few exceptions, your articles have been nonsense, or such as to have appealed only to specialized technical groups. This leaves the broad mass of us readers with a great big hole in our magazine, and a feeling of resentment in our bellies.

Regardless of whether Dianetics is the Evolution of a New Science or sheer rubbish, is inconsequential. What does matter is that we buy your magazine for the pleasure and entertainment which it gives us, and I for one, feel cheated, when I open it and find that one-third of it is given over to the promotion of some screw-ball hypothesis, hoax or obscure question which is not of gen-

eral interest.—C. E. Howard, Box 37, Greensburg, Ohio.

Sorry you find dianetics of no interest. It was my belief that knowledge of the human mind was of the most immediate and general interest because each of us possesses one.

Dear Mr. Campbell:

To you, Mr. Campbell, my sincere thanks for doing what you would naturally do. Your conservative presentation of Hubbard's article is a very fine example of make-up-your-own-mind reporting, and a fine refutation of the remarks to be found

WE RENT BOOKS BY MAIL

HUNDREDS OF SF READERS HAVE ALREADY JOINED OUR SCIENCE FANTASY FICTION
LENDING LIBRARY

All the Books you want to read but can't afford to buy — mailed direct to your home at ASTOUNDINGLY LOW FEES. The latest British and American fantasy books to choose from. Have you read — "Pebble in the Sky", "Pattern for Conquest", "Nomad", "The Red Planet", etc. These and over 200 other titles are now available.

DON'T WAIT! WRITE TODAY!

Get all the details at no cost or obligation to you. Learn also how you can become a Free Reader.

DAYTON'S 1217 So. Blvd., Bronx 59, N. Y.

ATTENTION—LOCAL FANS—COME IN and Join our SF LIBRARY under our TRANSIENT PLAN.

in a recent weekly magazine article. While hardly qualified to pass judgment on Hubbard's "discoveries," I myself am convinced that there is some kernel of truth in the article, just how much I am not prepared to state. But I am very glad that the article was not presented with the label, "This is the Gospel truth."

This impartial presentation is, I feel, a direct contrast to the various magazine articles which have recently appeared which deal with the "findings" of one Immanuel Velikovsky. I mention this in order to request that you have either de Camp or Ley do an article on "Worlds In Collision," or, failing that, at least a lengthy book review. Pardon my prejudice, but I'd prefer a slightly acid treatment of Vellie.

As for the An Lab:

1. "The Helping Hand," by Poul Anderson.

2. "The Potters of Firsk," by Jack Vance. A new idea, well presented.

3. "The Wizard of Linn," by A. E. van Vogt. Just plodding along.

4. "The Apprentice," by Miles M. Acheson. Any relation to you-know-who? The trouble with this story was that it had only one idea, and therefore needed too much killing.

I heard Jack Williamson's "With Folded Hands—" on the radio last week, very good job, too. Nor is this apparently the last of ASF's radio appearances. Next week I think we'll get Heinlein's "Universe," and at some later time, "Requiem." ASF's invaded the movie field, too. Heinlein's "Destination Moon" has been

mentioned, with illustrations, in *Life*, *The New York Times Magazine*, *Parade*, and several other periodicals. But that's just Heinlein, not ASF. I have heard, however, that Hubbard's Doc Methuselah will soon cavort across the screen, and just yesterday, I heard that Hollywood has latched onto "Who Goes There" by a fellow named Campbell. Know him?

Why not have Heinlein do an article on the problems involved in the filming of DM? Or is it already in the mill?

Milestones: One issue you say ASF has 100,000 readers, the next 150,000. Last October *Time* said 80,000. Is that the reason for the subscription ad?

Forgot to mention, Hubbard's article, while instructive, was also entertaining. Who said that research was dull?

You want comments on the cover? All I can say is that while I don't particularly care for Brush, he certainly outdid himself. ♪

When does "Who Goes There" come to the local theater?—Dean McLaughlin, 1214 W. Washington St., Ann Arbor, Michigan.

ASF's sales approach 100,000—and due to multiple readership per copy, the readership is between 150,000 and 200,000. Velikovsky's "Worlds In Collision" is reviewed by de Camp in this issue. I don't yet know when — or under what title—"Who Goes There?" will appear.

*"Unlike anything you have ever read before
—a tale of terror and triumph..."*

THE DEMON'S MIRROR

By JAMES WALLERSTEIN

Here was the greatest Treasure in history. Yet its possessors faced a peril of which no tongue dared to speak...

It was "a demon's instrument, diabolically conceived, that gave to man the power and the madness of the gods."

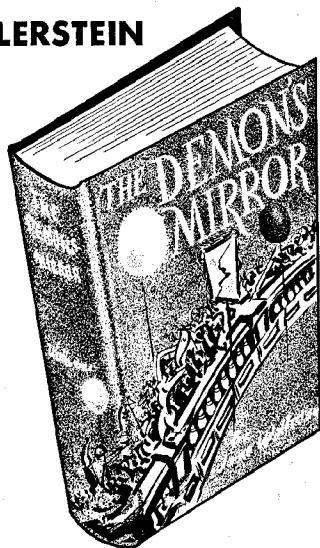
Brought into the world by a strange devil-god, the Mirror could make the dreams of man come real!

What happens in modern times when the Mirror falls into the hands of three rogues — an embezzling bank clerk, a drunken doctor and a waterfront hoodlum?

What inspired a young man and woman in love to seek the evil Mirror and conquer the Horror?

Who were the Lerenocks — the mysterious Invisible Order? How did they combine the secrets of modern science with ancient lore to protect the people from the demon's instrument and bring evil doers who sought the Mirror to justice?

Read THE DEMON'S MIRROR, a gripping and powerful S-F novel of the death struggle of Hope against Fear. It is packed with dramatic adventure and spine-tingling thrills!



The list price of THE DEMON'S MIRROR is \$3.50. The special pre-publication price to readers of *Astounding Science Fiction* is only **\$2⁵⁰** postpaid. Send for your copy of this thought-provoking and exciting novel *today*.

HARBINGER HOUSE
296 Broadway, New York

Please reserve a copy of THE DEMON'S MIRROR at the special price of \$2.50.

- Enclosed is \$2.50. You pay postage.
 Send C.O.D. plus postage.

NAME

ADDRESS

CITY ZONE STATE

