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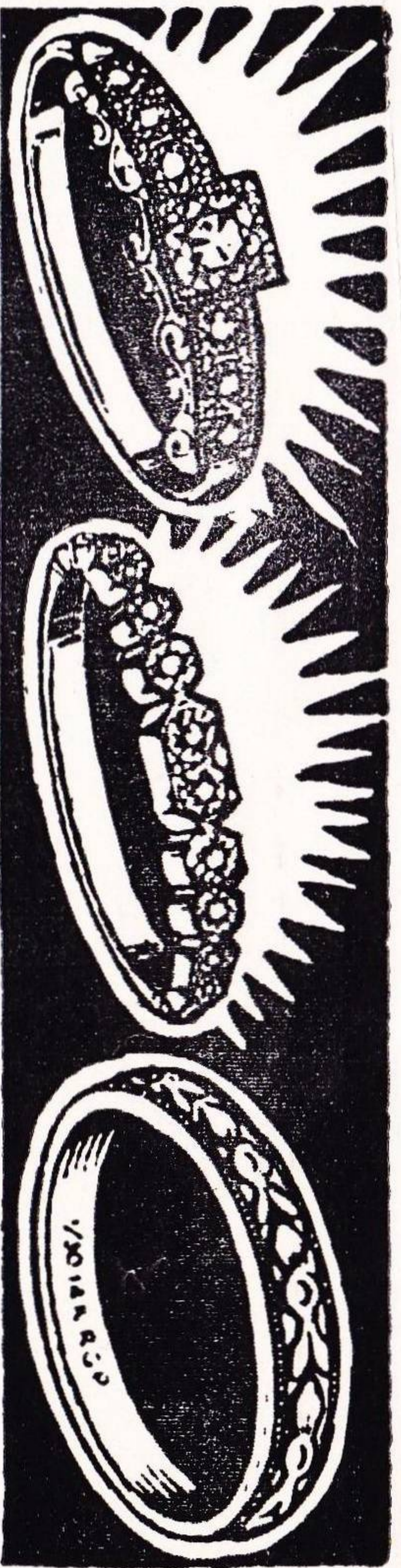
ISAAC ASIMOV

*"Point of View:
Mercury"*

**THE EARTHQUAKE
REMEDY**

by T. H. MATHIEU





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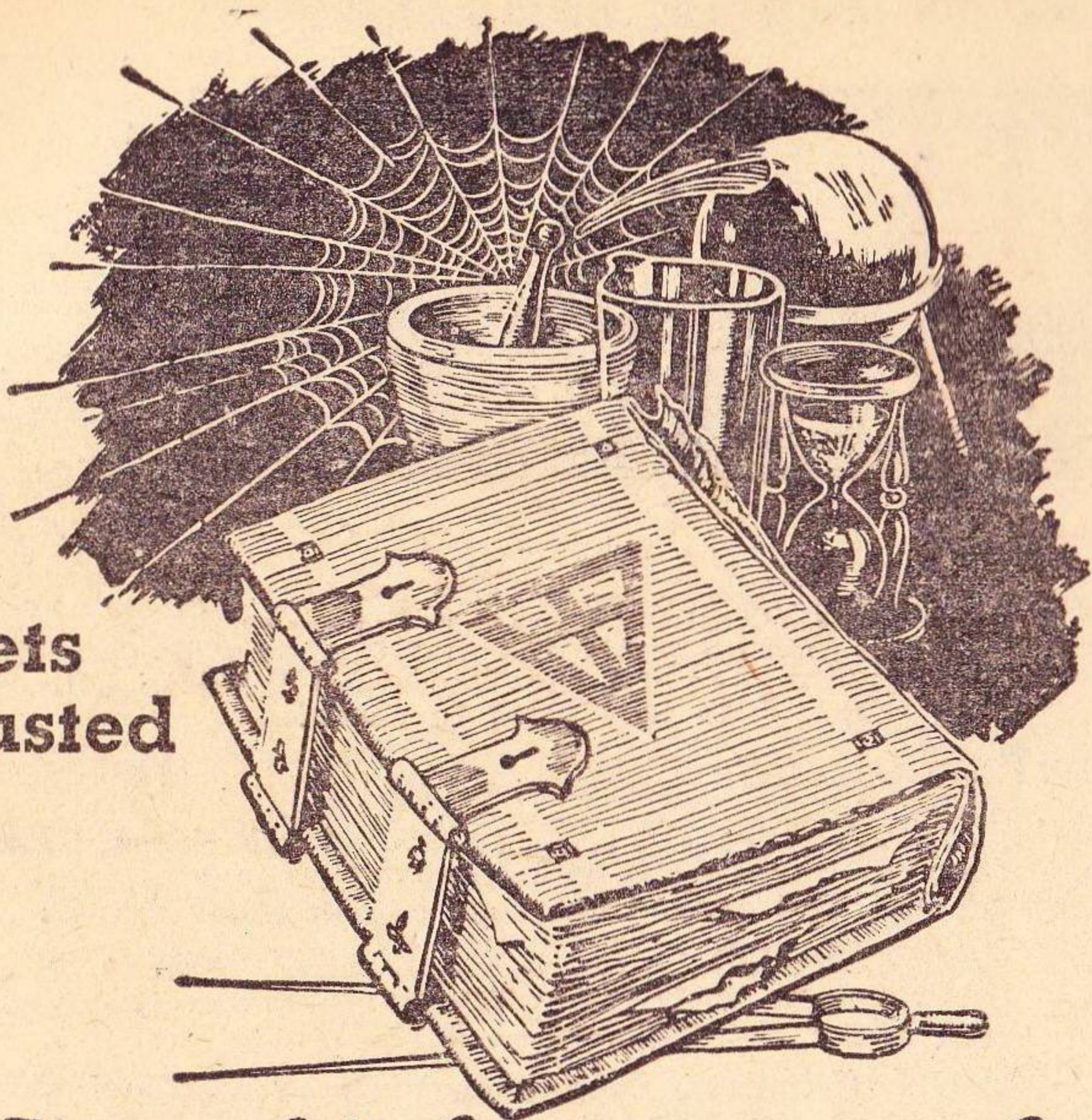
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THE SPACE-AGE MAGAZINE

FUTURE SCIENCE FICTION

No. 38

August,

1958

35¢

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Leading National Magazines, Newspapers, Syndicated Columnists, Medical Journals, and Reports from Medical Congress indicate the benefits of ROYAL JELLY, a "living" high energy food.

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- Sexual Weakness
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• Royal Jelly gives a feeling of increased sexual drive and energy, especially to men and women over 40.

• Royal Jelly permits prolonged intellectual work without tiring.

• Royal Jelly produces a pleasing state of relaxed well-being and eases tension.

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THE SONG

by A. Bertram

Chandler

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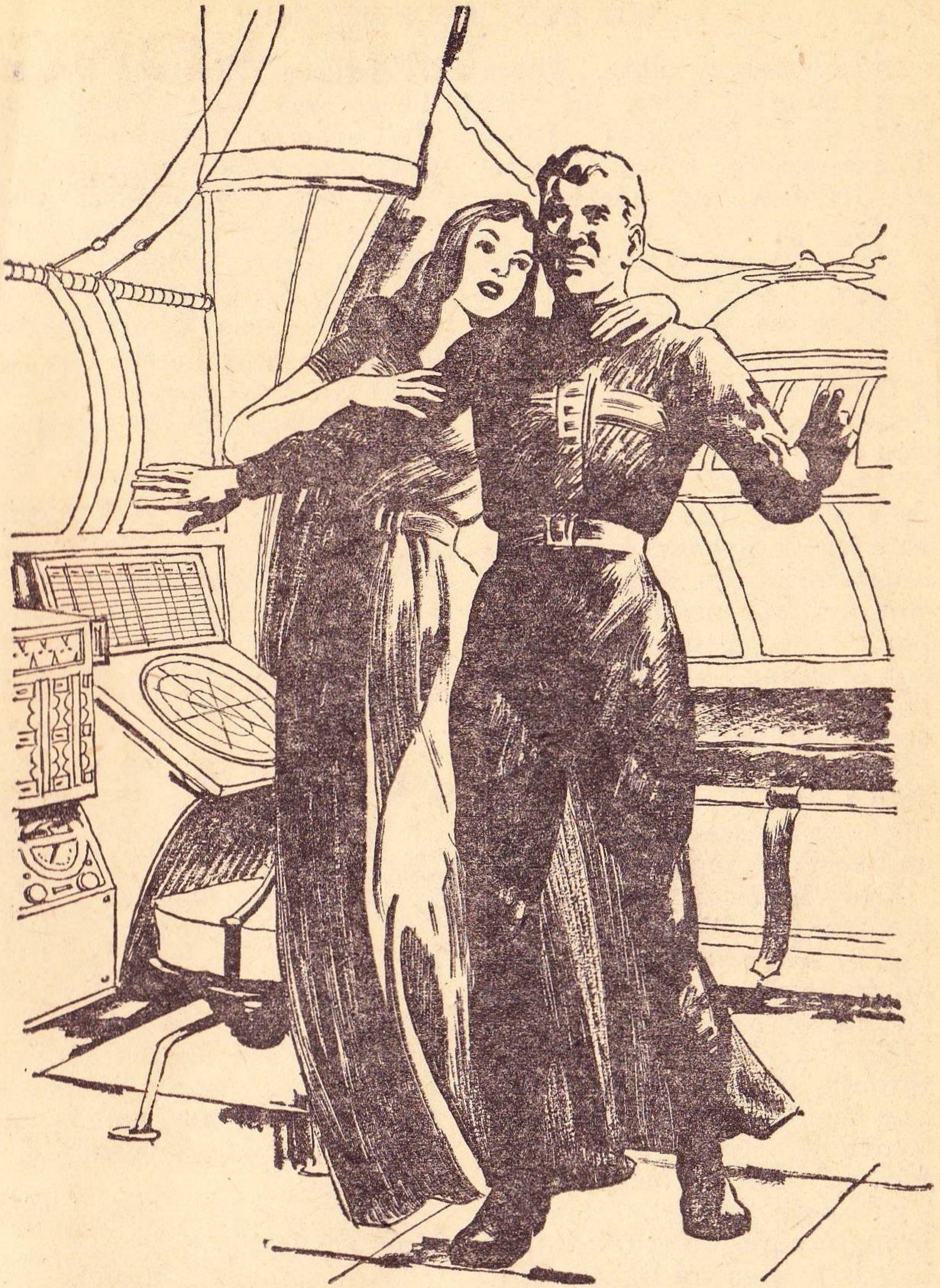
Meteors might account for the loss of a couple of ships — but not ten. And the Thunderchild would be the eleventh, unless...

GANYMEDE QUEEN was the tenth. *Ganymede Queen*, of the Jovian Mail Lines, was homeward bound from Port Europa, via Ceres City, when she vanished—the tenth ship to disappear in the Asteroid Belt.

Star Seeker—owned by the Interplanetary Survey Commission, the second ship to push out as far as the Belt—was the first. It was assumed at the time that she had come into collision with one of the myraid fragments of planetary debris infesting the Ecliptic between Mars and Jupiter. Years later—when the search for wreckage was at last abandoned—it was as-

sumed that her Captain and crew, smitten by the madness not uncommon in those relatively early days of space travel, had decided to abandon their assignment and had driven their ship out to Jupiter or Saturn, had crashed on either of the two giant planets or, fuel exhausted, had fallen into some eccentric orbit around, but far from, the Sun.

Then there were *Sarah Anne* and *Sweet Sue*, two little ore carriers owned by the Asteroid Mining Corporation. There were *Vesta*, *Marlene* and *Hermione*—all freighters owned by Ceres City Carriers. There was *Pathfinder*—



There was rapture on Madison's face, as he started forward like a sleepwalker. Mary clung to him, but he didn't know she was there.

another Survey ship. There was *Ring Master*, of the Saturnian Satellites Line. There was the tramp freighter *Stardust*, on charter to CCC.

There was *Ganymede Queen*.

There was *Thunderchild*.

IT WAS QUIET in the Lounge of *Thunderchild*. It was early "afternoon"—by the ship's chronometers—that time of day that has been devoted aboard ship, from time immemorial, to the pleasant and civilized custom of *siesta*. Some few passengers were not sleeping—but these were indulging in no activities that could possibly disturb either their fellows or the off-duty ship's staff. Some were reading; some were playing chess, and some were playing cards.

Guy Madison was among the readers. There was nothing, he often said, like a Deep Space voyage to give one the chance to catch up on one's back reading, to plough through all the classics that one should read but that one, somehow, never finds time for on the surface of the average planet. He had brought almost a trunk full of books—ultra-lightweight, Deep Space editions, of course—along with him, mainly classics. There were the plays of Shakespeare.

There was "*War and Peace*". There was "*For Whom The Bell Tolls*". There was Waldermeyer's translation of "*The Odyssey*". There was "*From Here to Eternity*". There were "*Ulysses*" and "*Finnegan's Wake*". He was reading the Waldermeyer when the soft music issuing from the loud speaker faded, to be replaced by the relatively harsh voice of the announcer.

"This is Station A S T, the Voice of the Asteroids, broadcasting to all settlements, to all miners and prospectors, to the ships in Space. This is the news, and this is Mervyn Riddell reading it.

"GRAVE FEARS are entertained for the safety of the Jovian Mail liner *Ganymede Queen*, now over sixteen hours overdue at the Ceres City spaceport. Signals, both broadcast and beamed along the vessel's estimated approach orbit, have not been answered. The Survey Service ship *Navigator* is being readied for Space, and is expected to blast off within half an hour..."

"She's not the first," said Madison to his wife.

"A typically fatuous remark," replied Mary Madison. "Listen to the News, can't you?"

"Let me finish," said Mad-

ison. "What I meant is that she's not the first in this sector of Space. There's *something* here that knocks off ships—and that knocks 'em off without a trace. The Belt's been well enough surveyed, and one would think that in all the years since the first disappearance—*Star Seeker*, I think it was—something would have been found. But—if we include *Ganymede Queen*—no less than ten ships have vanished completely."

"Space is big," said his wife.

"Agreed. But the Asteroid Belt, after all, has a very limited area. And the detector devices used by the prospectors would indicate, even at extreme ranges, the huge concentration of pure metal that is a ship."

"The trouble with you," she said, "is that you never forget for one minute that you're a writer of mystery stories. You insist on seeing mystery where there is no mystery. So many things can happen to a ship—collision with a large meteorite; the pile getting out of control; a failure of the air-conditioning plant... Oh, I could go on indefinitely."

"ALL RIGHT," he said. "You're a Space Captain's daughter. You know all

the answers. But we'll deal with the three points you raised. Point one—the collision theory. That, I admit, is possible. Such a collision could well throw the wreckage right out of the Belt—it all boils down to whatever is the resultant of the forces involved. Point two—trouble with the pile. That I can't grant you. The flare would be seen by somebody. Point three—failure of the air-conditioning plant. That I can't grant you either; there would be ample time for the ship to scream out her plight to the entire Solar System on her radio."

"Don't carry on so," she said wearily. "We're on holiday, looking forward to seeing the Jovian Satellites for the first time. We're very sorry for the people aboard *Ganymede Queen*, but there isn't anything that we can do for them. In any case, it might be our turn next..."

The volume of sound from the loud speaker abruptly increased.

"This is the Captain speaking," announced an authoritative voice. "The ship will be diverted from her orbit to institute a search for the missing liner, *Ganymede Queen*. Passengers will please retire to their cabins and strap themselves into their acceleration couches. All crew mem-

bers with no maneuvering stations will do likewise. The changes of acceleration will be announced before being made. That is all."

The Madisons picked up their books, joined the general exodus from the Lounge.

GUY MADISON strapped his wife into her couch, ignoring her protests that she could manage it by herself. He wished, as he had so often wished during their married life, that she was just a little less capable. Her seeming fragility was, he knew, deceptive. The world saw her as a slight, frail blonde, and assumed she was afflicted—or that her husband was afflicted—by the blonde's traditional dumbness. This was far from the truth. She read his manuscripts; suggested improvements and then, in her capacity as his agent, she dickered with the publishing houses for the highest possible price. Madison was grateful—and more than a little resentful.

He lowered his long, lean body on to his own couch and adjusted the straps. He was still fumbling with the last fasteners when the Captain's voice came from the bulkhead speaker: "Attention, all! Attention, all! Stand by for Null G! Stand by for Null G!"

The roar of the rockets—muffled, it was, by many layers of insulation but still, normally, an omnipresent background noise to every activity—ceased. The feeling of weightlessness was offset by the couch straps, but Madison felt, nonetheless, his usual panicky fear with the loss of orientation, the failure to be able to distinguish *up* from *down*.

"They're starting the gyroscopes," said Mary.

He heard the initial hum rise rapidly up the scale to an almost supersonic whine. He felt the ship turning, as the slight centrifugal force gave the illusion of gravity. It was worse than Free Fall had been—*down* was now at the outboard bulkhead.

"There're plastic bags in the rack over the bunk," suggested his wife.

"I'm all right," he gulped.

"Attention, all! Attention, all! 2 G acceleration is about to commence! 2 G acceleration is about to commence!"

THE WHINE of the gyroscopes was replaced by the roar of the rockets. The acceleration couches creaked under the suddenly-returning weight of their occupants. Madison fought for breath. He felt as though an elephant were sitting on his chest.

"Spacemen," remarked

Mary, "can take 5 Gs without making a fuss about it."

"I'm not a spaceman," he gasped, "I don't want to be one, ever."

"Thank God there's one in the family," said Mary icily.

"What? Hostess on the Lunar Ferry—and you call that being a spaceman?"

"I'm still a member of the Guild," she said.

"All right, all right."

"Attention, please! Attention, please! Stand by for Null G! Stand by for Null G!"

"They're having their fun and games up there," complained Madison bitterly.

"Captain Welsh is a very competent officer," said Mary. "My father, under whom he shipped as Mate, always spoke very highly of him."

"Attention, all! Attention, all! This is the Captain speaking. It is probable that the vessel will be proceeding in Free Fall for some hours; but it may be necessary, at any moment, to make changes of velocity or orbit. Passengers and off-duty personnel will remain strapped in their couches until further notice. That is all."

"I don't..." gulped Madison. "I don't...feel..."

"Use a plastic bag," said Mary unsympathetically.

THE HOSTESS who, an hour or so later, brought round refreshments was inclined to be talkative. After all, Mary was a member of the Guild; and her husband, therefore, could be assumed almost to be an honorary spaceman by marriage.

"I've been up in Control, Mrs. Madison," she said. "We're in the thick of the Drift—nothing but rocks as far as the eye can see, some of 'em no bigger than pebbles, some of 'em big enough to raise a family on. The Captain has tried to put us into the same approach orbit used by *Ganymede Queen*, but we're coasting in the Ceres City, with a speed only slightly in excess of that of the planetoids. I've seen some ruins, too—the first time that I've ever seen any. They were on a big, odd-shaped rock—it looked as though it must once have been a mountain, or part of a mountain. The Mate let me look through the telescope."

"And what did you see?" asked Madison.

"A long, low roof," she said, "and white pillars. It was like... Like..." She picked up the copy of "*The Odyssey*" that was tucked under Madison's chest strap. "Like the building on the cover of this book."

"Like a Greek temple," said

M a d i s o n. "Interesting. It makes one wonder if the natives of the old fifth planet ever got as far as Earth—there's so much in Greek mythology that could be explained by the visitations of other-wordly beings..."

"MORE MYSTERIES," M i n t e r j e c t e d Mary. "You do love them, don't you? Anyhow, we know that the ancient Martians and the people of the fifth planet both had space travel—otherwise they could hardly have fought a war that destroyed one world and devastated the other—so there's no reason to suppose that they didn't visit Earth."

"But there's no *proof*," objected Madison. "No definite proof. It's all a matter of myth and legend..."

"But what's so important about it?" asked his wife.

"It is important," he insisted. "Who knows the Past, controls the Future..."

"Our knowledge of *that* Past would be of no use to us," she said. She gestured toward the book that the Hostess was still holding. "Greeks and Trojans, and a long voyage home made by one Ulysses (who must have been the world's worst navigator), to his Penelope, who must have been the world's

most faithful wife—what is there of value to us in *that*?"

"There *could* be something," he said.

"Tell me," she said sweetly.

"Well, for example, you know how quite a few people do think that the history of the three worlds—Earth, Mars and the fifth planet—is somehow linked up, how they think that intelligent life of all three planets had a common origin. For all we know, I may have Martian blood in my veins..."

"I should never," she said, "have let you join that absurd Society."

"BUT THERE'S something in it, Mrs. Madison," insisted the hostess. "There is, really. My first time on Mars—my first Deep Space trip after I graduated from the Lunar Ferry—I *knew* somehow that I had been there before. It was like... It was like coming home—and finding your home burned to the ground. There was so much familiar, and so much—the deserts, the ruins—unfamiliar. And I'm not the only one. The Captain told me, at the time, that he'd felt the same *his* first time."

"And I felt the same," said Madison.

"And I didn't," said Mary Madison. "It's utterly fantas-

tic, really, the number of times that the *deja vu* phenomenon has been explained by psychologists; and the number of otherwise intelligent people who still use it as proof of racial memory, reincarnation, and the Lord knows what else..."

"The phenomenon has never been explained by the psychologists," disagreed Madison. "It's only been explained away."

"All right—if it makes you happy." Then, to the hostess, "I hate to interfere, my dear—but don't you think that the other passengers might be waiting for their coffee and sandwiches?"

"A pity," said the hostess. "I could talk about this sort of thing for *hours*."

"Your trouble," said Mary Madison to her husband after the girl had left, "is that you want a woman who agrees with you all the time. Don't think I didn't notice the way you were watching that little, red-headed popsy."

"*Your* trouble," he replied, "is that you haven't an open mind on these matters."

"I just don't bother with 'em," she said. "They're of absolutely no importance whatsoever."

"Attention, all! Attention, all! The ship is about to swing into a new heading, after which One G accelera-

tion will be maintained for a few minutes. The search for *Ganymede Queen* is still proceeding. That is all."

MADISON tried to read, to lose himself in the adventures of long ago and far away Ulysses—Circe, Cyclops, Scylla and Charbidis, the Sirens. It was all so unreal—and so real. Circe typified the power of women to remake their men, or to subject them to virtual slavery and degradation. He looked across to the couch on which Mary was sleeping, thought, *She's tried to turn me into an ant—an industrious ant...* He grinned, pleased by the absurd comparison. The Cyclops legend—that was easy enough to explain. Ulysses, who must have been a man of considerable intelligence, tangled with a one-track-mind fanatic, whose weakness, as well as his strength, lay in his singlemindedness. Scylla and Charbidis—the whirlpools in the Straits of Messina; no allegories there. The Sirens... (There were the Lorelei, too, of course.) Once again—how Homer harped on that theme!—the power of women to wreck a man's life...

The bulkhead speaker coughed and crackled.

Then, "Attention, all! Attention, all..."

The Captain's voice ceased abruptly, was replaced by that of a woman, a woman singing.

Music? wondered Madison. Music—at a time like this?

He ceased to wonder. His mind relaxed, lulled by the golden voice of the unknown singer. A golden woman, he thought. He could almost see her—tall, and slim, and somehow, subtly, glowing.

I must go to her, he thought. I must go to her. She's all that I've ever wanted, all that I shall ever want. She is peace, and fulfillment, and soft arms and soft lips after the hard day's labor...

THE SHIP was accelerating again now, but he hardly noticed it. He unbuckled the straps, slid off the couch. Moving to the slow rhythm of the song, like a man walking underwater, he made his way to the door. Something—somebody—was in his way. It was Mary. Impatiently he brushed her aside, but she clung to his arm.

"Guy! Where do you think you're going?"

"I must go to...her," he muttered.

"Guy! Are you mad? That hostess, you mean?"

He did not answer, but pushed on towards the door.

"Guy! Listen to me! It's dangerous to be out of your couch!"

"It is not dangerous with her."

"Guy! Guy! Stop!"

They struggled by the doorway. She was a strong woman, in spite of her appearance of fragility. She tripped him, and they fell to the deck together. His shirt pulled out from his shorts, became wrapped around his head.

Abruptly he ceased fighting.

"I can still hear it," he said, his voice muffled by the garment. "But it's not so strong. I know what it is."

"What can you hear?" she demanded.

"The song. From the loud-speaker. Let me up, Mary. I must go to the Control Room."

"There's no song," she cried. "The speaker's dead."

"To you, perhaps. Listen, my dear, this is serious. I think that they can hear the song in Control. I think that this ship is going to vanish like all the others—unless we can stop it. Get me some of that cleansing tissue of yours, and stuff my ears with it."

"I still think that you're mad," she told him.

BUT SHE got up from the deck, went to the little cabinet where her toilet requisites were stowed. When she found the cleansing tissue

he was sitting on his couch. His shirt was no longer wrapped around his head, but he had a hand clamped firmly over each ear. He let his right hand fall, reluctantly. She blocked the ear with a wad of the soft tissue. She blocked his left ear next.

He could still hear the song—but faintly. It stirred in him no more than a vague sense of longing that was almost nostalgia. He was tempted to remove the ear-plugs—but he knew what the result would be and found it easy to resist temptation. He got up, walked to the cabin door, flung it open.

“Look,” he said. “They can hear the song.”

His wife stared out into the alleyway, stared at the men walking slowly past the door, like sleepwalkers. She stared at the women who, as she had done, were trying to restrain their husbands.

“Come with me,” ordered Madison. “Bring all the tissues from the cabinet.”

AT LAST, they reached Control. It had been no easy journey—the alleyways and companionways were jammed with somnambulistic men, with struggling women. And once there was an abrupt deceleration as the Drive was cut, and a new voice blaring out from the speakers: “This

is the Mate. The Captain is mad and I am taking over. I am shaping orbit for...” But the song, the melody and the rhythm of the song, surged over the spoken words, drowning them before they were cut off in mid sentence. And with no warning the rockets fired again—not One G this time, but at least three.

They kept on, somehow, crawling rather than walking, their bodies weighing like lead in the brutal acceleration. Mary took the lead. She knew ships—even though they had been only the relatively small rockets of the Lunar Ferry—and was able to guide her husband, almost by instinct, through alleyways and up ladders that, normally, would be used by ship’s personnel only.

They climbed the final ladder, emerged through the hatch into the ship’s Control Room. Madison had been there before, during one of the conducted tours of Control and Engine Room led by a bored ship’s officer. He had been there before, and had been impressed by the alertness of all those on duty, by the atmosphere of quiet efficiency. That atmosphere was gone now. The Captain and his officers were quiet—but looked far from alert. They sat in their chairs—with the exception of the Mate, who

was sprawled on the deck, battered and unconscious—staring up through the forward viewport.

MADISON looked up, saw, right ahead, an unwinking blue light, a cold, somehow menacing, glow. He looked away from the light to the nearest radar screen. He did not know enough about such things to be able to read the range of whatever it was ahead—but he could see that it was a solid body, and that the range was decreasing rapidly.

"The tissues," he snapped to Mary. He gestured towards the Captain. "Block his ears!"

She ignored him. She moved—slowly and painfully—to the Radio Officer, who was seated before a complex looking switchboard upon which shone little, colored lights. She prepared the make-shift earplugs. She inserted them. She screamed into that officer's ear, "Switch off the receivers! Switch off the receivers!"

Slowly, the radioman's hand came up to the board. One by one, the little lights, flickered and died. And the song, cut off in mid-syllable, died with them, was no more than a haunting memory, a memory that was destroyed by the Captain's profanity, by the mad flurry of activity in

the Control Room as the ship was flung out of her collision orbit.

SLOWLY, cautiously, *Thunderchild* circled the asteroid.

This was, obviously, no fragment of the shattered fifth planet. It was too regular in shape, an almost perfect sphere, with its own mountains and valleys, plains and plateaux. It must once have been a satellite.

The blue glow was still there—an aura around the tiny world. It flickered. It pulsed hungrily. It seemed to expand. The Captain's strong fingers depressed the firing keys on the arm of his chair. Acceleration smote *Thunderchild's* people like a physical blow.

"I'm getting away from here," said the shipmaster. "And fast. The Survey boys can look after this—not that they'll find any more of *Ganymede Queen* than we did. That uncanny light must be some sort of disintegrating radiation..."

"Yes," agreed Madison. "And the song was to lure us to within range of it."

"But why did some of us hear the song, and some not?" asked the Captain.

"That, as you say, is for the Survey boys to find out. Here's my theory, for what

it's worth. This thing—obviously—was a weapon—a fully-automatic one that had to exercise a certain discrimination, that had to be able to distinguish friend from foe. Its 'brain' must be sensitive to the radiation emitted by all life forms. It was when it picked up the Martian radiation that it went into action.

“YOU'RE FAMILIAR, of course, with the theory that many of us are hybrid Martians. Ten ships—we should have been the eleventh—have passed, by sheer blind chance, within range of this thing, and each of the ten had hybrid Martians among her personnel. Each of the ten was using her radio and, naturally, had her intercom switched on. The song, of course, was a hypnotic device to draw the ships inside the effective range of that disintegration field.”

“But how did you know?” asked the Captain.

“It was a hunch—but I shouldn't have had the hunch if I hadn't been reading the “*Odyssey*”, if I hadn't been

talking, with my wife and one of your hostesses, about the hybrid Martian theory. The two added up.”

“The *Odyssey*?”

“Yes. Ulysses and the Sirens. He was lashed to the mast, and had the ears of himself and his crew stopped with wax...”

“Even so,” said the Captain, “it was quick thinking on your part to deal with the Radio Officer first and get him to switch everything off.”

“Not on my part,” admitted Madison. “I was going to deal with *you* first—and then the others would have dealt with me as they dealt with the Mate—how is he, by the way?”

“Nothing broken,” said the Captain. “But go on.”

“It was, as I was saying, my wife's idea. I had a job convincing her of the nature of the danger, but once she was convinced...”

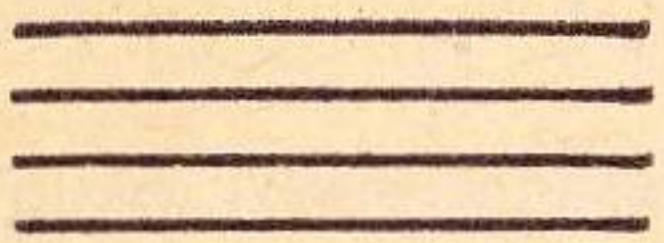
“I've always said,” stated Mary Madison, “that Ulysses would have got into far less trouble if he'd taken *his* wife along with him.”

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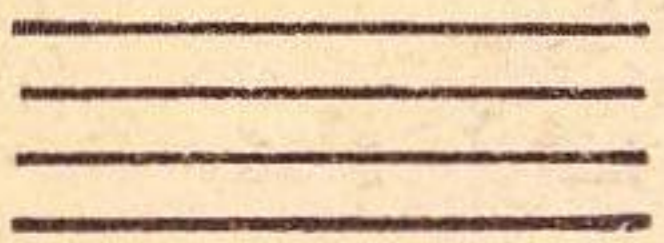
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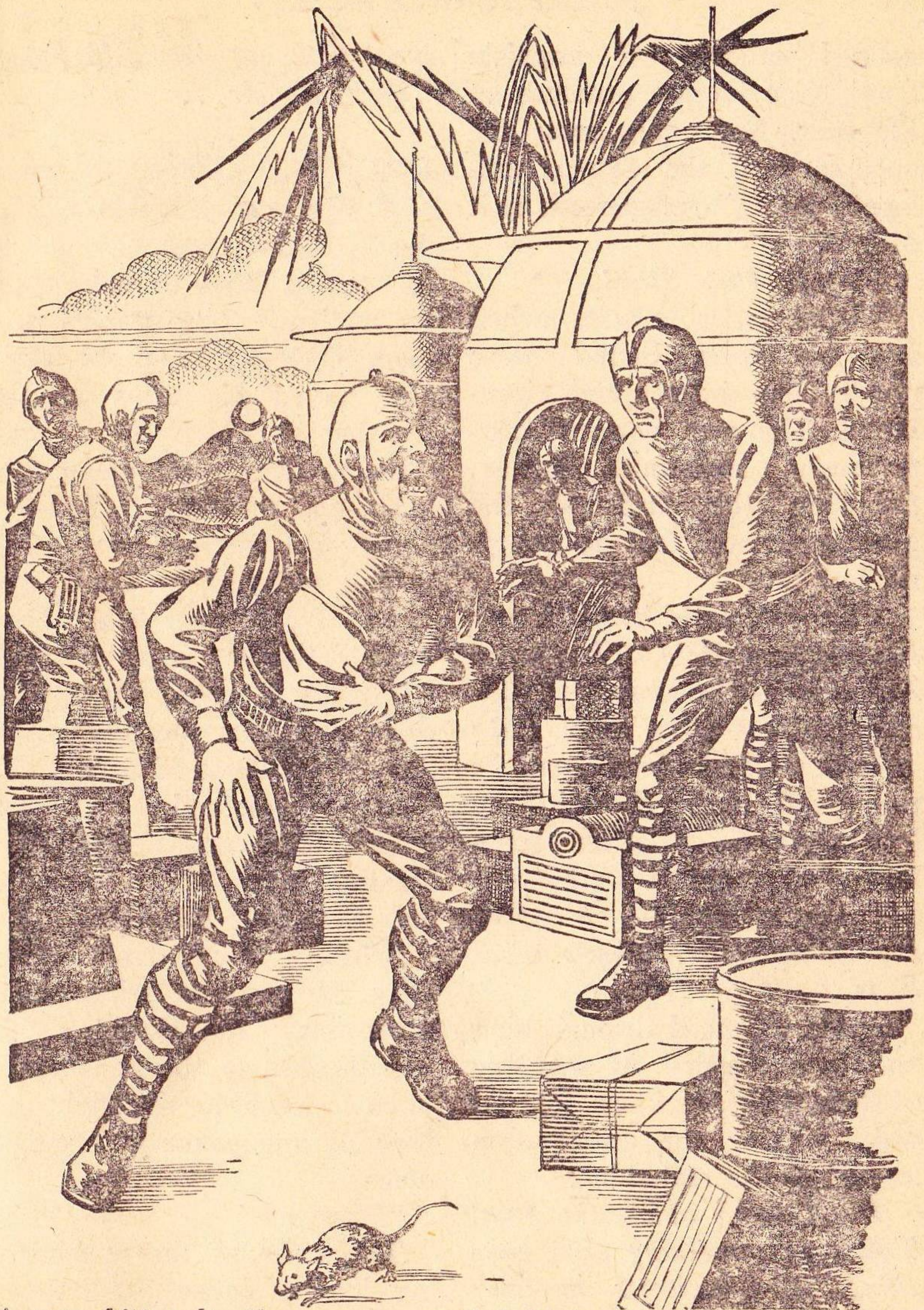
A Sequel to *Cargo: Death!*

by T. H. Mathieu

This planet could be colonized if a way were found to deal with pseudomus, the little creature whose bite brought death in twenty seconds. But there was another problem — the natives regarded a pregnant pseudomus as sacred!

illustrated by ORBAN

THE PAIN came in thinking. It compressed his waves, striking at every lungs till breathing was difficult. It clouded muscle fiber. It clouded cult, and the sand they'd his mind and inhibited his poured under his eyelids



A man bitten by the pseudomus died in twenty seconds, died very painfully . . .

gouged grooves of anguish. Sand, then intense pressure on the eyes. And again came the cutting until the cosmos collapsed into a homogeneous unit of hurt.

Stop it. Stop. Stop!

His shoulder muscles ached and his arms, bound, were numb from interrupted circulation. The post bounced continuously, sometimes sharply, following the lead of the ground. Or was that his imagination? No.

They said I did it, but I only tried to help. Help? They know I'm here—why haven't they come? Those dirty, dirty, dirty swines. Carlyle knows, and he won't call them. Should have let that morposap handle this— His mind supplied an hysterical, idiotic giggle—*Morphosap, morphodite. That's what he is.*

Again it lanced through him, and then stopped. It was one of their tricks, he knew. They'd wait, making the anticipation as bad as the real thing.

Don't think about the pain. Think of something else, anything. The waitress in City One, log tables, anything. Think of how this happened,

how you got into this spot. Think, Royale...

“**T**HAT'S JUST dandy. We're surrounded by deadly beasts, and you get to go back to Earth to make studies on 'em.” The speaker and team geologist, Richard Royale, waved his arms at the clearing in which they stood. “Maybe there's one under that bush—or that one. You go home—but where do we go?”

Tall and with an overly pedantic air, the team leader Graham Higgins answered, “Thought I made that point clear at the meeting last night, Son. We get out of here, too.” The grey hair and weather-beaten face combined to give Higgins more of an ominous look than he'd intended.

“Heck, Doc, don't mind Dick. He's got to gripe about something.” Art Hamilton, final member of the trio, spoke in haste to vitiate the slight underlying annoyance in Higgins' tones.

“I know.”

The noise of the approaching 'copter interrupted them. It was time for farewells.

Higgins shook Hamilton's

hand. "You know, I envy you, myself. I haven't been home in over ten years. We'll miss you, Art. Take care of yourself—and the beast you have."

THEY ALL stared at the cage Hamilton carried gingerly. In it was a small animal, about the size of a mouse. Purple colored, with long ears and fat cheeks, it looked more ludicrous than dangerous. But they were intensely aware of how deadly it was. As though sharing a single thought, their eyes turned to the two graves at the top of the hill above the clearing. Welcher and Wong lay there; two good Survey men who'd each died in twenty seconds when the animal's poison fangs struck home.

"And, Art," Higgins continued, "I *mean* take care of it. First, get it home; then find us something we can use to stamp it out. Chemical poison if you get desperate—but chemicals are ineffective. I'd prefer a disease that we can introduce; you'll have to work closely with the Survey Bacteriological Office at home. Just get me an answer—this planet's population is getting ready to ex-

pand away from the coasts and into the interior. And that's what the Planetological Survey was established for: to help the settlers in every way possible. We've got to make it safe for 'em—there aren't enough perfect double-A Earth-type planets around that we can afford to abandon The Monster."

HAMILTON nodded and turned to Royale, smiling, as the 'copter settled down. The two gripped hands, for a moment saying nothing. Speech was unnecessary: two years of close association had made them extremely good friends. It was either that or bitter enemies—but the Survey generally chose its men for foreign field assignment with an eye toward high social maturity.

Then Royale broke the exchange. "I know we've gone all over this, Dad, but don't get too close to that cute little stewardess on the run back to Earth."

"You're just jealous."

"I sure am but the day *you* make out with her..."

Hamilton's demeanor became serious, "I'm going to marry her."

"As I say, Dad, the day you make out with her, with or without sanction, will be the day..." Royale paused, searching for the most ridiculous metaphor he could. Then his geological subconscious supplied it, and he continued, "...will be the day earthquake weather becomes an actuality, and not an old wives' tale."

Hamilton said nothing, just smiled smugly and swung up into the 'copter. It rose into the air. The two left behind waved and watched till it became a formless speck in the sky. Then they turned and headed back for camp, their thoughts on the departing friend.

"Nice guy," Higgins grunted.

"The best—and now that he's out of earshot, I can't think of anyone I'd rather see get the trip, failing me of course."

A slight troubled frown appeared in the team leader's eyes. "Son, about the two of you and that girl..."

"It's nothing, Doc. We were just kicking it around. She isn't my type; no, with us all is equanimity." Royale's answer reassured the other.

They strode in silence for a

few moments, trying to think of some other subject, but failing.

"You know," Higgins said, "I've done my share of traveling around this man's galaxy. In spite of it all, I'll never get used to it. It's hard to believe that Hamilton will arrive home tonight, half a thousand light years away."

"Yeah, Doc," the geologist's nod was emphatic. "And what's even sillier—it'll take Dad there twice as long to get to the field at City One as it will to get home! Sometimes I wonder if maybe we aren't overlooking some of the smaller things."

They reached camp.

MAN WAS a funny, contrary animal, that specified year of 2106—or 1500, or 10,000 B. C. He was a creature of contrast; a two-sided coin, one primitive, one god-like. In 10,000 B. C. he painted pictures on walls, made statuary, and showed evidence of developing a culture that laid stress on aesthetics, social science, philosophy.

Then, for some reason the paleopsychologists wouldn't, or

couldn't discuss, having begun to achieve it, Man abandoned it; he went out, beat the stuffing out of all the other life forms around, as well as himself, and settled down to satisfying his creature comforts.

He was still so inclined in 2106. He had power: atomics. He had it to waste, and he converted it to a fantastic plethora of labor-saving devices. Still he continued to be contrary: he cured cancer but not the common cold. There was not enough money for that particular research, so man coughed, hacked, and sneezed exactly as he'd done in those draughty caves where he painted his pictures.

Power, sure, but he still hadn't come up with a better form of transportation than atomic-powered aircraft for moving about on planets with atmospheres.

And yet—perhaps in compensation—he'd taken the power and made a present to himself of the Universe. This was his biggest deed, his grandest accomplishment; and Man, in 2106, was still in the midst of narcissistic appreciation of it.

THE PROCESS itself was complex, the totality of all he'd learned since that day he discovered iron pigments made a fine medium for the pictures, but its color wasn't nearly as bright as that of the blood issuing from his next cave neighbor. The process was complex, but the explanation, the how of it, was fairly simple.

He took the power, made a lever of it, and bent the Universe to his will. He horse-shoed a hunk of space, light years away, right down to the relative vicinity of Earth; then, like a surgeon holding a scalpel with boxing gloves, he punched a hole big enough to drive a truck into—or a ship—through both sides of the space-time continuum. As a result, the contrary, ambivalent, two-legged jerk was the master of his galaxy and, so far as he knew, the Universe.

He spread out and kept going, a thumping fullback who has gained ten yards, seems to be stopped in the secondary, and then finds the field clear to the goal. It was the answer to a home world just beginning to worry about overcrowding. Fortunes? Anyone could find

them if they looked long enough. Planets? We have them, the latest models, in a complete variety of colors and types. Solar systems? Certainly, sir, certainly. Limit one to a customer...well, maybe two—or ten.

BUT MAN was a peculiar, contrary animal. Part of him ignored the quest for a fortune; part of him wanted simply a peaceful existence, a parcel of ground to farm and settle. And, in the midst of plenty, why scratch out a life on a planet inimical to him? That part wanted planets like Earth, very much like Earth.

Such planets were around, but relatively rare and a little more difficult to find. So Man, unified after all those thousand of years into a single world, established the Earth Planeto-logical Survey.

The Survey's function was to find Earth-type planets, map them, and determine their suitability for colonization. It had to establish whether the soil was right for farming; water resources adequate; native fauna and flora dangerous—

and a hundred other factors in a planet's ecological response to the coming of the painter-turned-materialist.

The job was huge, frustrating and satisfying, never really completed, and never ahead of the waves of colonists.

But there was one they liked. They dubbed it "The Monster."

IT HAD TAKEN them a little better than a week to move the camp. Even that, in view of the field equipment a team carried, was something out of the ordinary. They packed the delicate equipment lovingly: the microscopes, the glassware, the electronic gear. They packed the other equipment hatefully: the food, the utensils, the bulky tents. Higgins oversaw the operation, and frequently—once every five minutes, the cynics said—commented on the ancestry of the animal that drove them out and consigned it to eternal torture in the life-after-death. But finally the planes came from Headquarters, moved them a thousand miles north, and left them to go through the whole procedure again, to unpack.

IT WAS A lonely region, unsullied by evidence of Man. It was new, and would add to their storehouse of knowledge about The Monster. They camped by a big river, which drained a large mountainous area in back of them. And finally, established, they were ready to go to work.

Just at the end of the first operational planning meeting, in the central jack-of-all-uses tent, Royale phrased the question which had been bothering them all. "Doc, what happens if it is here, too?"

"Eh?"

"The thing—Hamilton's mouse. We're only a thousand miles away from our last site. What if it's around this area?"

A voice sang out from the back, "Good old Royale—he's put his foot in Doc's judgement again!"

There was general laughter, including that of the older team leader. Then he spoke. "In all seriousness, I'm glad you brought it up, Son. Might clear the air around here. I fully expect that it *is* present!"

"But then, what..." began Royale.

Higgins raised a hand. "All

of us will, of course, have to be on the alert at every instance. But we were at the last site for about ten weeks before the little beast's numbers got so thick it was dangerous. Guess it took that long for the word to get around. Meanwhile, we should have ten good weeks of work—and this time we should be prepared. 'Course, it may not be here—but I think we'd better assume that it is. Sure wish, though, it wouldn't breed so fast."

"Got a better wish," said Stromberg, the botanist. "I wish that we find the way to get rid of it in a hurry."

"Agreed, unanimously," Higgins nodded. "Incidentally, will someone give thought to surrounding our food stores with a variety of chemical poisons? That might hold them off a while longer."

THE MORPHOSAPROLOGIST, newly arrived, interjected a change of subject, "This is supposed to be Quin territory, Doc. Will you fill them in?"

"You take it, Carlyle—I'm not as much up on them as I

should be, and that's what you're here for."

Dry and shrivelled-appearing, the morphosapologist—the study of *intelligent* life forms: they had to coin a name when "anthropologist" would no longer cover the case, so they dropped "sap" into the middle of "morphologist"—rubbed a hand back and forth over a bald head and said, "The area we are now in is, roughly considered, that where the intelligent native population is assumed to be. We've been in unofficial contact with the Quins for years: early planet-reconnaissance reports, tales of settlers in the region, and the like. But we've never contacted them."

"Why not?" he was asked, "what are you morphosaps doing with the taxpayer's money—boondoggling?" That was a standard gag, one all civil servants were used to hearing and being ribbed about.

They laughed. Carlyle smiled, a trifle ruefully. "It is a good question; in answer, I'll recount a few facts. Of all people, you guys shouldn't have to be reminded how thinly the Survey is spread over the gal-

axy; the Morphosapological Division has had quite a few more pressing problems than those of the Monster.

"Next, you've only been under close study for about twenty years; you've hardly even established the fact of Quin's actuality. Y'know, for quite a time we thought they were a legend in the making. We had such scattered reports—some of which didn't jibe. Now we know why the reports were so far apart."

HE STOPPED, enjoying their absorbed interest in his minor mystery. He drank some water, lit a cigar, and drew the pause out as much as he could. Then he continued, "We're positive the Quins exist; too many established eye-witness accounts. In fact, on the basis of Travis' Law of Populations, we can estimate their numbers at about seventy-five thousand. That's why there has been so little contact: *we're* only fifty thousand strong, spread over a whole planet. Granted, *they* are more numerous and concentrated, still..."

Stromberg whistled. "Only

seventy-five. That isn't much of a population!"

"Why not? It's enough for a start. This planet is in an early stage of faunal development," replied Carlysle, a little huffily, under slight professional questioning, "After all, in the Upper Paleolithic on Earth, the total Eurasian population didn't number more than a hundred thousand..."

Royale interrupted, drawling lazily, "I understand the number was closer to fifty thousand."

"Young man..." began Carlysle.

HIGGINS was an old, experienced hand at these arguments; he bore many a mental scar from the engagements, and was able to recognize them when they started. Deftly he sidetracked the potential blowup. "What else should we know about the Quins?"

Carlysle recovered his poise; he and Royale unspokenly agreed to postpone the argument. Again the dry little morphosapologist nervously smoothed out a head of absent hair. "There's really not an

awful lot to tell. From what we've been able to ascertain, they are canine in ancestry, probably classifiable as Pseudo-ursidae. Culture reported to be extremely primitive—throwing weapons only." As he finished speaking, the meeting broke up.

Higgins sought out Royale, saying, "Come on over to my tent, Son. I want to talk about your job."

They unfolded a map on the table inside. It was a continental recon, prepared from an aerial survey. Higgins pointed to a prominent river system. "Look, one of the biggest rivers on this continent. And here"—he tapped a tributary—"is our approximate location. One of its major tribs."

The team leader cleared his throat and shifted into pedantic high gear. He drew some aerial photographs from a case and threw them down over the map. "Now, here we are located on the photos. Notice how the stream drains those mountains to the east?"

"**Y**EAH," ROYALE mused, looking the terrain over.

"Hey!" His cry was startled, delighted.

"Thought you'd see it—that huge valley up in the range with the big lake in it. The lake that feeds this tributary: ideal for settlement, isn't it?"

"Sure is, Doc, but..."

"You're learning to be a geologist, Son. There could be a hundred things wrong with it; you can't jump to conclusions on the basis of aerials—you have to get out on the land itself."

Royale smiled. "Was that 'you' used as a specific or a general pronoun?"

"Both—but suppose you run on up to that area and spend a couple of days of fast reconnaissance. I'd like you to get a few things."

"Such as?"

"Well, plot me a geological map of the valley and surrounding hills. Set up a rough local section with approximate thicknesses. Don't be fancy—don't try to establish anything but relative ages. Keep your eyes open for fossils, of course. Oh, yes—you might also check the soil types in the alluvium of the valley proper.

"You can leave in the morn-

ing. I'll have the copter drop you off, and return in—say, three days."

"Three days? What do I do for sleep, Doc?"

"Hell, boy, you're always asleep on your feet anyway!"

II

LAST NIGHT'S earthquake had nearly killed him when that tree came crashing down. He was still jumpy, so the noise he heard—the fingernail across a blackboard noise—made his cuts and bruises, acquired battling with the brush, unimportant. Royale was only vaguely aware of the pounding of his heart and his parched, dry throat. Somewhere, in the dense undergrowth, at his feet, was the source of that sound. The noise of rustling was followed by another, lower pitched, screech which rent the air. There! Something was moving in the brush—something peculiarly colored purple.

Slowly his hand went to the holster at his side, and slowly he brought the gun up to a level position. A chill ran through him. No second look was need-

ed to identify the positive death: it was one of the creatures they'd hoped wasn't around, one of the "mice." Royale caught a whiff of an odor it exuded, clying and sour. The beast came on, advancing more cautiously but determinedly. Royale felt himself beginning to retch; quickly he fired the gun several times.

And got a reaction. He felt cold and hot at the same time, and weak; and although the animal had been killed, he was still unable to move.

WHEN HE finally did investigate, the geologist was amazed. This one was, relatively speaking, huge. He guessed it to be three or four times as big as the others they'd met. It was certainly pregnant; its present physical condition and appearance made him conclude the young would have been born alive—and soon. On that score he had no compunctions—it was like getting two for the price of one. The graves on the hill at the last camp were still fresh in his mind.

Clinically he looked at the violence he had done and felt

nothing. The beast was bigger, and thereby might represent a difficult species from that they knew—or was it simply a variety of the same species?

Royale could have spent the rest of the afternoon there, speculating on the taxonomic position of the animal—Hamilton was responsible for his heightened interest in the subject—but he remembered Higgins' injunction, and his respect for the man both as an older geologist and team leader made him push on after taking pictures. The day was hot, his supply of water was diminishing, and the battle against the hill and the clutching, scratching brush resumed its importance.

The brush began to thicken as he worked his way up a small canyon, and he cursed it roundly. Royale indulged in some good old-fashioned Aristotelian thinking; the scrub oak became an entity, a very stubborn entity.

You stinking scrub oak, you mother... he broke off, smiling. *No, I forgot, this is The Monster, you're Pseudoquercus dumosa. False scrub oak. Who is kidding whom? P s u e d o—*

pseudo—we're losing our sense of originality." As though frightened by the names he called it, the brush ended abruptly, and Royale found himself in a small clearing.

"Do you think," he said aloud, "do you think you can break for a smoke?"

He looked around the empty clearing and strode over to a diorite outcrop. "Damn!" The expletive was involuntary, *Talking to myself again*, he thought. *Gotta stop that or go see a good analyst when I get back—if I haven't died of old age by then.*

HE SET HIS single jack down, handle pointing up, and waited while little rivulets of perspiration coursed down past his eyebrows and cheeks. Then he drew a damp pack of cigarets out of his shirt pocket, lit one, and sat back on the greengreen rock. The cigaret tasted flat and harsh; they always did on hot days when he was trying to conserve water. With a grimace, he scooped up a handful of dirt and stamped the glowing end into it.

Well, he thought and then

flinched—had he said it aloud? He looked around the borders of the clearing, at the mute, scrubby vegetation as if for confirmation, and, receiving none, went on, *Guess you need a rest—Doc keeps us out in the field too long.*

Wonder if that little waitress back in City One will still—oops, you have been in the field too long. Six months, isn't it? This has to stop.

Royale was surprised to find himself on his feet, gesticulating. He felt embarrassed and sat down again, trying to relax.

His train of thought was suddenly interrupted by a penetrating sense of being observed. It was a feeling not infrequently experienced when he worked alone, but this time it was peculiarly persistent. The weather changed, too; it had become cooler. The geologist's uneasiness increased, and he rose, looking about. Over the crest of the rising hill, he could see clouds forming, darkening skies threatened a storm, and he had as yet no place to camp. Still, the lake was on the other side of the hill. He swung the single jack onto his shoulder

and began a rapid climb up the slope.

AT THE TOP, he was still annoyed by the feeling of being watched. He considered the possibility of having been followed by the beast's mate; and knowing nothing of the habits of the animals, Royale wished he could take more precautions. But then he became aware of the terrain below.

The lake was there, purple but reflecting the grey of the sky above. The ridge he stood on dropped sharply down to the water and was dirty green and brush covered. Far, far over, on the other side of the valley, the hills lazily rose again; but all he could distinguish was a sere yellow color. He decided to camp on the shore of the lake, and the descent to it was far easier than the upward climb had been.

After dinner, he relaxed gratefully. His shoulder muscles ached slightly; no matter how often he carried a pack, he felt he'd never get used to it. Darkness came with quickening pace; the heavy clouds were present by inference—

they were dark smears in a dark background.

ROYALE postponed lighting his lantern for a while. He enjoyed sitting in the dark in new country: he would stare at the sky, trying to grasp the finite infinity of the Universe. He'd reach out mental feelers and sweep the countryside, drinking in its newness, appreciating the idea that he was the first human in this particular spot. All of these things combined to give him a feeling of the immensity of existence, and perversely, companionship.

But with a dutiful sigh, he fired the lantern and began working: inking his aerials, writing notes on the day's observances, studying again the pictures of the beast he'd killed.

Then, finished, and like the prospector of old, Royale was huddled in his sleeping bag before the rays of the Coleman lantern had gone out. The rain he had been expecting, began. He squirmed about, trying to adjust his body to the ground: and in the midst of a turn, he noticed, through the blur of the rain, the dim outline of a fig-

ure. His first impression was hallucinatory—a distant rock coming alive. A second look proved that neither his eyes, nor his imagination were playing tricks. He was surrounded. He sat up slowly, and then, even more slowly, stood up. He was conscious of the steadily falling rain, but more of the silent and flat-footed approaching shapes, which by now could be distinguished as humanoid.

Quins!

EVEN WITH the mingled fear and curiosity attendant upon recognizing them, something else impinged on his senses. There was a sharp tremor. Trees began to sway, and before he could evaluate the data as “e a r t h q u a k e!” he was jarred off his feet. There were a few more heavy shocks and then the tremors lessened. He rose, noticing that the humanoids were prostrate, facing the lake, out of which seemed to come a rumbling, as though in protest, and the sound of rushing water.

The humanoids stood erect and with precision and directness, came toward him.

III

HE WAS IN a village, and he knew he was inside a hut in the village, but there was no light. Feeling the walls, he was impressed with their intensely hard material: this assured him, for he had no desire to be crushed within the hut, and he suspected more quakes were coming.

They had been continuous on the trek to the village. None with the intensity of the first, but the shaking had been constant and fairly severe. He felt as though he were in the midst of some poorly-written adventure story. The Quins had bound his arms, gathered his belongings, and forced him to march with them to their village. He had not bothered to struggle; unaware of their motives, he wished in no way to antagonize them—or Carlyle, whom Royale felt certain would gleefully wield torture instruments if the geologist botched this first meeting. Although he tried to communicate with them in every way he knew—including Galactic

Basic—he received no response.

Royale was cold and wet, and had been in the hut a long time. He was eagerly awaiting daylight through the opening of the hut; for although there was as yet insufficient light, he knew that someone was standing guard. He wanted a close look.

With the final coming of daylight, he expected some activity on the part of his captors, but there was none. His anxiety increased as the day wore on, but in spite of his preoccupation with the immediate future, he could not help speculating on the constancy and persistence of the earthquakes. Nor could he help wondering about the rumbles and sounds of agitated water in the lake.

THE GUARD outside, who was apparently not bothered by the continuous rain, stood with rounded shoulders, massive arms and legs, and hirsute body. The face was essentially flat, with only a suggestion of a projecting nose. Canines protruded slightly over the lower lips. The forehead and chin sloped away from the

face, giving the head a spherical shape, and an over-all teddybear's appearance. The rounded ears were set high up and fairly close together. The characteristics of the guard made Royale rather sure that this race was of canine descent. It seemed, though he hated to admit it, that the morphosapologist had been correct in his statement.

But canine, pseudo-ursidae, or what will you, the appearance of the Quins seemed to have no relationship to their architecture. At first Royale wondered if such a relationship existed because the village huts—such as the one in which he was incarcerated—were so strange. They were hemispherical in form, and resembled igloos. The building material was stone; with almost mechanical precision he called it metamorphosed diorite. It was tough and hard.

But why a stone igloo. There were other, more easily obtained materials in the area, he knew, and certainly easier construction plans. An idea knocked on the door of his conscious, asking to be let in, but a noise outside attracted

his attention. Through the opening of the hut, he noticed a small group of his captors approaching.

UP TO THEN, the geologist had had no fears for his personal safety. He'd been tired and wet and hungry and pretty generally uncomfortable; however, his curiosity at the village and its inhabitants overrode the discomfort. While it was true that they had taken him prisoner, they seemed, superficially, quiet and amiable. With a start he realized he'd carried the teddybear analogy too far.

For the approaching figures had easily identifiable bows in their grasp, and if what they carried slung over their shoulders was not what the purist would call quivers and arrows, they'd do in a pinch. Silently he cursed Carlyle and a phrase the man had used at the meeting, "primitive throwing weapons only."

The Quins came into the hut appearing anything but amiable now. Roughly they pushed Royale outside and led him through a maze of other build-

ings toward the village square. Although the walk took only a few moments, he was able to observe one striking feature about the dwellings. They were all built into solid bedrock, and soil coverings had been scrupulously avoided. Royale was surprised—in view of the supposed primitiveness of the people—at the trouble to which they'd gone to establish permanence. Certainly here was no nomadic society.

A crowd was gathered in the square. The man was led to a dais in the center, upon which stood a single figure. Royale was hoisted up to him. The leader raised his arms and all crowd noises were stilled. There was a brief pause, during which the geologist looked about, attempting to assess the situation. Down below, immediately in front, a Quin stood facing the crowd, his back to the dais. There were enough decorations draped upon this figure for Royale to make an easy evaluation of witch-doctor or whatever the local equivalent was. The impassive figure was amply shunned by the crowd which pressed in from all sides.

IN SPITE of the light rain now falling and cold, Royale began to perspire freely. He didn't like what he saw, and there was an underlying tenseness in the crowd which he sensed. But he knew he could never make it through them; he'd have to bluff his way out. The leader turned and asked in Galactic Basic, "Can you understand me?"

At Royale's affirmative, he went on; "We think you have killed the Odon." With dramatic gesture he pointed behind. The crowd parted and through it came some Quins carrying an animal. They dropped it at the witch-doctor's feet at the bottom of the dais: Royale saw the beast he had shot the day before. "So what!" was his first reaction; then startled. "The beast was probably taboo!"

The leader was speaking again. "My people regard the Odon as sacred when it is about to bear young. The Storm and Lake Gods are angry," he repeated, "and if you have killed the Odon..."

His statement was an implied threat, but Royale could not lie. He suddenly realized

why he'd had the feeling of being watched the previous day. The Quins must have seen him.

"It was a mistake, I was not familiar with the Odon, and I knew not whether it wanted to do me harm."

"Mistake or not..." the leader began impassively. He was interrupted by the beginnings of a tremor. It became increasingly sharp and only a few in the square were able to maintain their balance. However, they immediately threw themselves face downward in the direction of the lake. One mystery was solved for the man as he noticed a spout of water rising from the center of the lake. Here were his noises of deep rumbling and rushing water. It was quite far out and must have been big for them to be able to hear the effects from that distance.

HE RELECTED that life in the village must be rather disconcerting, in view of the numerous natural interruptions. The quake stopped, and the witch-doctor rose first, spoke in his own tongue, made a series of circular hand mo-

tions, and then touched the Odon.

All eyes turned to Royale and the leader who resumed speaking. "You have made our Storm and Lake gods very angry; therefore, you must be a sacrifice to them. When the Storm God and the Lake God are angry, and they are always angry together..."

"Do you mean," Royale could not help breaking in, "that whenever there is a storm, the ground trembles, too?"

The other nodded. In spite of his predicament, Royale recognized a certain parallelism in legends. The thought flashed into his mind, "How odd! The old story of earthquake weather seems to have preceded even the first geologists here."

"When the Storm God and Lake God are angry," the leader went on, "The ground shakes and water rises from the lake. When the gods become too angry, the fish will die and we will have no food. Our Magician—he indicated the witch-doctor—"says that we must appease the gods by feeding to the Lake God, he who has destroyed the Odon."

With regal gesture, the leader turned and pointed toward the lake. "See. Even now the water rises; it is already four hand-widths above its usual level."

ROYALE followed the end of the pointing finger, and could see the wind rippling over the top of the water which was creeping toward the village. The rain, continuous throughout the discussion, was beating into his face, and he blinked it out of his eyes. The combination of the rain and the wind and the heavily laden grey skies sent a shiver of more than physical discomfort through him. He felt frightened in the midst of a situation which he was in no way prepared to meet. He thought of his equipment and the radio and how he might communicate with the camp. Higgins, he was sure, could have suggested something.

Once again the leader spoke. "When the proper preparations have been made, you will be offered to the Lake God."

Back again in the hut, Royale paced restlessly. Something—an elusive something—

bothered him, but his state of mind interfered with clear thinking. He had no way of knowing how long he was to remain alive.

And yet, for some reason, he felt a strong sense of sympathy from the Quin's leader. He could not, of course, interpret facial nuances or conversational shadings among these people. Still, the leader had seemed to regret sentencing him.

ROYALE remembered phrases he'd used: "We think you killed the Odon...and "If you have..." *Think, if*—the words were usually missing from the dogmatic vocabulary of the primitive.

And, "Our Magician says we must sacrifice you." Usually a tribal chief gave the orders himself. Something did not follow logically.

Then the nebulous idea began bothering him again. Fragments of what he had seen and heard during the day were coming back. It was like a well-organized mystery story; he felt that if he could piece together the bits of puzzle, he would be able to find a solution. The answer, when it came,

came swiftly. It was such a minor action: he glanced down at the junction of the wall with the bedrock floor below, and suddenly the picture was complete.

Royale grinned tightly. It felt like his first in twenty thousand years, and relief swept over him with as much force as the rain had wetted him during the day. For the first time in his brief career he found occasion to bless those long dull hours of seminar in vulcanology. *Now*, he thought. *If it'll only work...*

He stepped through the opening and said to the guard, "I must see your leader." At the latter's quizzical look, his anxiety came to the fore; he fell into a typical tourist-among-foreigners attitude and repeated, shouting, "I must see your leader." The guard pushed him back into the hut, but he did hear sounds of communication.

WITHIN moments, the individual who had condemned him to death stood before him. Royale was impressed with his calmness and his fairness. The Quins and

their leader were unlike any primitive people he knew—a strange admixture of emotional and logical thinking. The visit itself impressed him; it was rare in any culture when the head of a clan came to see a prisoner, and it implied a certain consideration.

Royale was the first to break the silence. This had to be right, and he'd considered its phraseology carefully. Under any circumstances he was gambling with possibly his last chance. Perhaps he'd attributed too many "human" emotions to this individual.

"I do not intend to demean your Gods," he said slowly. "They are powerful Gods. But some are not gods at all." He stopped, awaiting the other's outburst. The Quin leader remained impassive.

It was an encouraging sign. "I come from a land far, far away. It used to be that my people, too, thought the gods resided all about them. They found this was not true.

"You breathe. Is that the action of a 'breathing god'?"

The Quin emitted a series of short staccato growls, interpreted by Royale as laughter.

He continued, "You take a container of water and pour it down the hill so that it runs as a small stream. Are you a 'small stream god'?"

The leader had as yet said nothing, and his silence was becoming disconcerting. It takes two to make an argument—or a discussion.

"If you blocked up the river with trees and rocks till it all gathered into a lake would you be a 'lake god'?" Here it was, the idea he had to get over. He paused briefly, swallowed, and threw the big curve. "What then if I tell you the Lake God who spits water is no god at all? What then if I tell you the rumbling and water spitting are as natural as your breathing, and have no connection with the Odon?"

THE OTHER chewed Royale's statement over with deep concentration. The young man waited, each instant passing with fateful slowness, each heartbeat a guillotine of decision.

"Those are strong words."

The balance had shifted in his favor. Eagerly he rushed on, "I can prove them. I can

make the lake stop—and the earthquakes.”

Again a pause but not so protracted. Finally: “You think you can do this?”

“I can prove what I claim, but I must call upon help. If you will bring my belongings to me, before the next sleep period is over you shall have your proof. The lake will no longer kill the fish and the ground will cease to shake.”

“If you can do this,” the leader said, “you will be given your freedom.” It seemed to Royale that the leader’s willingness to let him try was as though he were humoring a small child. No doubt, the quakes had existed for hundreds of years, and many had tried in vain to please the gods. Since the geologist would be a sacrifice eventually, he might as well eat a hearty breakfast.

THE QUIN leader turned to go, but Royale stopped him. “I must warn you,” he said, “the taming of the lake will not be easy. During the sleep period when the fight is in progress, the lake will roar louder than ever before and the ground will shake harder. Your

people must be told this, so they will not be frightened.”

Slightly contemptuously the leader replied, “My people are never frightened.” He turned and walked away.

Soon the pack was brought to the hut, and with nervous fingers he checked through it to see if everything was all right. It was disarranged, as though it had been taken apart, each item inspected, and haphazardly returned. “Sort of pawed over,” he punned, grimly. But everything seemed present, and from the pile he drew two objects.

One was a small, round pocket tape measure. The other was a three inch, rectangular black box with rounded corners—a Brunton compass. He patted it lovingly; truly it was the geologist’s friend. Its solid, chunky feel comforted him and gave confidence to his idea. He’d often heard it said that while a Brunton couldn’t do everything a wife could, it was at least more quiet.

Ready at last, he stepped through the door of the hut, opened the compass, and sighted at the bubbling froth in the lake. Then he climbed to the

top of the hut and took another shot at the same spot. The guard watched him closely, but made no move to interfere. From the top, he let out the tape and measured the distance from the ground to the roof of the hut.

ROYALE was almost hysterically happy. He was taking positive action toward his own release: the tension and enforced inactivity of the last several hours came welling out in this project—he dared not consider that it might not work.

Childlike, he chanted.

“The tape atop this igloo’s roof

Hange down, and hence it
it dangles—

Royale may well escape
this yet

With a base and two fat
angles!”

Finally finished, he leapt to the ground, re-entered the hut, and collected the small but efficient communicator all team field members carried.

Outside once more, he activated it and spoke tensely, “Higgins’ team base! Royale

to Higgins’ base, come in, someone.”

But all he heard were the sounds of village activity and his guard’s heavy breathing.

Again: “Royale to Higgins’ team base. Do you read me, Higgins’ base? Fine time you slob pick to be asleep. Come in, team!”

Minutes dragged by, and his anxiety began to increase. The communicator’s batteries were limited—and Royale being Royale, he couldn’t remember when he’d put new ones in. The set might have failed at any moment.

SUDDENLY, with startling swiftness, the voice answered and he felt as though it was a voice telling him he’d inherited a million. “Royale! Where have you been?”

It was Stromberg, recognizable through the tinnyness of the communicator. With reproach Stromberg added, “The ’copter was up at the rendezvous point this morning and left when you didn’t show. Where are you?”

“Vacationing with the Quins.”

"The Quins! You've found them?"

With irony in his voice, the geologist said, "You might say the reverse was true. But let me talk to Doc, will you? This is important."

"No can do; he's out in the field." Royale suppressed a groan; the other continued, "One of the fellas thinks he saw our little mouse; Doc wanted to check in person. Stamped off saying he'd give you one more day to get to the rendezvous before he started a search. He said you'd better either be there tomorrow or too sick to make it; otherwise he'd nail you..."

"Listen!" Royale interrupted, "I'm in a mess, a hell of a mess. I need help and I can't wait for Doc to check in, maybe tomorrow or late tonight..." He broke off in distraction as the ground began trembling again. The lake burped up an amorphous mass of water, and settled back down to angry frothing.

"Royale?"

HE TURNED back to the set. "How much explosive

have we on hand at the camp?"

"Very little."

"OK, take the copter back to City One..."

"City One?"

"...and beg or borrow or steal as much as you can cram inside."

"Beg? Steal?" echoed Stromberg.

"Yes—and stop parroting me."

"Look, Royale, I can't take that responsibility..."

"You don't have to—I will."

In a burst of annoyance he added, "Listen you fool! I'm being held prisoner by the Quins; my life depends upon the help I get from you—this is a crash priority emergency."

The Survey taught its members cooperation and teamwork. On alien worlds they had to integrate—or die. At Royale's words, the man in camp stiffened slightly and then forgot all his objections. "Anything else?"

"Yeh, timers. Now, when you get back it'll be dark. I'm on the north shore of that lake showing up in the aerials, near the flat-topped mountain. Fly up here and I'll talk you in then." He paused momentarily

and then added, as an afterthought, "Oh, yes, Stromberg—tell Carlyle he's a fat-head: the 'primitive throwing weapons' of the Quins are the neatest damn looking bows and arrows you ever saw!"

IV

DARKNESS outside. Darkness and a storm, punctuated by frequent quakes. Wind-driven rain whipped through the hut's entryway, dampening the interior. Royale was cold, anxious, and he paced interminably. The Coleman, in the center, cast a vivid light about, pointing up the stark situation.

Some time before, the leader had returned. He glanced at the lantern, then at the captive. "It is the beginning of the sleep period."

"I know—I've done what I had to..."

"I told our Magician and the village that your god would slay the Lake God, that he was stronger. I could not explain to them that it was like breathing."

The geologist nodded, liking this alien, not knowing how to

express his gratitude. He concentrated on thinking at him with the mute hope the other would sense the empathy.

The Quin looked again at the lantern, "What god keeps fire in the glass?"

"That, too, is like breathing; it is no god," Royale replied. "Someday perhaps I will be able to explain it to you."

Apparently the explanation satisfied the other. "The Magician is out making preparations: he sides with the Lake God. He thinks there is something wrong with you that you make no magic of your own."

Royale smiled. "Someday perhaps *you* will be able to explain it to *him*."

"Never!" It was a growl, substantiating the canine ancestry of the creature.

THE QUIN looked searchingly into the man's face; then, with surprise, Royale felt both the leaders' hands on his shoulders. The squeeze he gave was brief, and he left before Royale could recover—and recover he needed to do. "You don't," he thought bemused, "simply shake off a

three or four hundred pound pseudo bear hug."

The storm had worsened, causing more anxiety. It could hurt his plans.

Then finally when he thought it was time, he contacted the camp. Higgins hadn't yet returned and Stromberg was exhausted, having made the flight and back in record time—10 hours. Carlyle had been the logical choice to go. *Some days, Royale thought, I should have stayed on Earth.*

So he paced, worried and silently cursed the storm gods. He'd have given a lot just to talk with Higgins—of all days the Doc had to pick to go wandering off.

His thinking was interfered with by a sound. It wasn't much at first, but his subconscious kept hammering away; suddenly he lifted his head and listened. Yes, by the saints, it was the noise of the helicopter struggling to make itself heard through the storm.

FLIPPING on the set, he caught the tail end of Carlyle's sentence, "...you, Royale, come in!"

"This is Royale—you're somewhere close by; I can hear you."

"Keep talking—I'll home on you."

The geologist replied, "What'll it be, Carlyle? You want me to give you my ideas on Quin society? I think we might clash. Instead, how about 'There was a young man from France, who waited ten years for the chance'?"

In spite of the heavy storm and concentrating on his job of positioning the captive, Carlyle laughed. For the first time in their association, Royale felt a diminishing of the tension bordering on dislike. The elder man replied, "Fine, I like limericks. What's the rest?"

"I'll save it till you get here; from the sound of it, you're overhead."

"I am. Hovering. Now what?"

"Get this position fixed with respect to north-south referents."

"OK, done."

"Now, hook the automation control in, and set azimuth at 148°, distance 4.58 kilometers.

Repeat: azimuth, 148°; distance 4.58 kilos."

"Check."

"You can't miss it—but take it easy in this storm. Can't have you crashing and lousing things up." The tremors began again, some fairly sharp.

"ROYALE?" Carlysle's question was hesitant. "Are you sure you wouldn't rather I drop down there right now? I could knock off the guard, and we could be gone..."

"Thanks" Royale hoped the word carried the warmth of gratitude he'd intended. He realized what the offer meant to the morphosap—the loss of contact with a race he badly wanted to meet. "Thanks, but we'd better play it straight. We can't afford to alienate those people, and that's what would happen. This way we can do 'em a favor. Besides, I have a feeling a nice guy has stuck his neck out for me—and I don't want to leave him on the hook.

"No, go on; you know what to do."

"Check, Royale—and good luck!"

The sound of the craft fell away, and now, nerves as taut as possible, he waited. Every climax, every crisis of his life, it seemed, was ninety per cent waiting. Wouldn't it be nice if everything meshed quickly for a change?

HE WAITED, counting seconds. The flight out—longer in the storm. The timer. Wasn't this the moment? No, not during the quake. He hoped Carlysle realized it. Now?

Now? Silence—falling rain. Relative silence, then. And stillness. No tremors. A hush, a baited breath. Focus on Royale, a blind creature in a lightless cave, weaving. Now. Now...

The noise of the explosion startled him. From that distance it was nothing more than a thud. And another. And still a third.

The first of the shock waves hit, and as it did, the noise of the blasts merged to a rising crescendo of animal growls. The shocks grew stronger, too. Each became a Thor-like hammer blow, the first tipping over the Coleman and sending it

skittering against the wall to lie breathless. They, too, united to badger the hut into a crazy, frenzied dance with Royale an unwilling partner.

Cessation came eventually, with Royale still wondering if the hut could withstand the punishment. Blinking, he realized it had: that was the first thought. Village noises—the sounds of excitement and awe—came to him, but they were in the background. There were no more quakes—he'd won! But even that thought was not uppermost.

He was no longer at fever pitch, and his body reacted to the let down. Fatigue, tremendous fatigue swept through him. He slept.

REMEMBER Royale?

It was a nightmare, wasn't it? A nightmare wherein all the teddybears in the toy store came to life and threatened to kill you if you didn't make the shaking stop; you tried and tried to throw the switch but you couldn't reach it. And the teddybears frightened you.

Frightened, you woke to

find the Quins in the hut and the quakes continuing.

The pain began again; through blurred vision he saw the witch doctor circling and cutting.

And their leader! It was quite an argument he and the witch-doctor had. But he and you could sense that the witch-doctor had the populace with him. There was disappointment in the leader's eyes, disappointment and pity. But he had to turn you over to the goon squad—he'd no other choice. He couldn't fight the whole village.

Nausea turned his stomach over; he retched and gagged. The effluvium ran down his chest, added unnoticed pain to his wounds, and spattered over his naked loins. The crowd noticed and made approving noises. Before it was to be death, but now, having offended the Lake God so it made the ground shake continuously—he had to suffer accordingly.

Where did you go wrong? What mistake did you make? It all seemed so logical.

They began working on his eyes again, and he reached the breaking point. Soundlessly he

slumped against the post, never hearing the man made thunder from the sky, unaware of Higgins' deep yell.

IT HURT. He didn't want to come out of it. The unconsciousness was comforting and painless. He objected, but a little spark of the rational animal overrode the objection.

He groaned and opened his eyes. Things were dim, diffuses. He could make out the hut, still shaking, and Higgins, bending over his prone body gently laving his wounds. Lances jabbed into his pupils.

"My eyes, Doc..."

"I know. Easy, son: we'll get out of this yet. I know part of the story, but tell me your side."

In spite of the burning which criss-crossed his body, he wanted to talk. Somehow, miraculously the team leader was here—and there wasn't a situation he couldn't handle, given the proper data. So he fought off the beckoning fingers of darkness and slowly said, "It's earthquake weather, Doc. I didn't believe it but it is so!

"The Quins told me that the quakes only occurred during

stormy weather. At first I thought it was superstition; later I found out how right they were.

"Somewhere about there—maybe it was the first thing I really noticed that started me thinking—the fact struck me that *all* their dwellings fitted the same pattern: they were hemispherical, of hard material, and built into bedrock. There's no reason why a primitive people should build such an elaborate structure except for the obvious—the frequency and severity of earthquakes."

THE FIRE flared up in him again, and he stopped. Then he rolled his head toward Higgins. "Doc! The Quins...! How did you get..."

"Never mind; that can come later." Higgin was firm. "Concentrate on the information."

Royale continued, "Another factor I noticed was that the wind—which, during the storm, blew continuously in one direction—had piled the water down at one end of the lake. You know, the way it does at Lake Michigan, back home.

"A n y w a y, things finally

snapped into place. What if local pressure-temperature conditions on The Monster were different from Earth's? Start with a storm, a low pressure area, removing a good part of the atmospheric column above the lake. Add winds removing water from the upper part of the lake and putting it in the lower, thereby lessening the water pressure on the upper lake bed. Finally, take the one-in-a-million—no, one-in-a-billion shot: a small spatter cone at the bottom which was delicate enough to erupt only when the proper conditions of lessened pressure were met. For confirmation, there was the water spout in the lake—my theory was correct!

“By bombing the volcano, Carlyle opened the orifice and internal pressure was suddenly released. That should have ended it. There was no more volcano, hence there should have been no more earthquakes. I don't know what I did wrong.”

ROYALE only thought he'd spoken aloud his lack of knowledge; it was mumbled and came to a halt halfway

through the sentence. He passed out.

It seemed to him there were several such incidents in a black-and-white series of sequences: one was quite clear.

Higgins was pacing the hut, smoking. He spoke slowly, each word an effort against the tide. “Doc, what happened?”

“You were right as far as you went, but there was a slight slip-up,” replied the older man. “You destroyed the cone, but actually it collapsed on itself and blocked the opening with debris—now it is only big enough to allow water to percolate downward in small amounts.

“That water, Son, becomes super-heated steam, and when it builds up enough head—which it does regularly—it blows! You're the only geologist who ever converted a small volcano into a geyser with one *coup de main!*”

Royale groaned; Higgins continued, “Sure, earthquake weather. They used to have it only during storms: now they've got it all year 'round.”

As though to underscore what he was saying, the tremors began once again. “What

are we going to do? Will the Quins..."

"Tell you what you're going to do, Son. Lie there till I can get you to some competent medical aid. Meanwhile we wait—with enough explosive we can open her and make a hot spring..."

A GAIN THE words faded out. The mosaic of impressions continued. Another series of explosions—but he'd been through that. Men, team men carrying him to the helicopter. It hurt when they moved him and he swore, weakly threatening them. A strange face, peering, examining him, shining light into his abused eyes.

And then the pain stopped.

Minutes, or days, later he was conscious again, fully conscious. He tried to sit up, but his body was sore, and hands resisted his rise. Whose hands? He suddenly realized he couldn't see.

In terror he put his hands to his eyes and felt bandages. "Stop worrying—they'll be all right. Scratched hell out of the corneas; you've got to rest

them." He recognized Carlyle's voice; and his shout "Higgins!" hurt his ears.

Footstep heralded the approach of the team leader. Gently he asked, "You feel all right, Royale?"

"Yes, little weak, but essentially OK, Doc."

"Well, Son,"—the voice suddenly became a roar—"I ought to can your butt. I ought to send you back to Earth so fast your head'd drop off!"

The geologist gulped.

Higgins continued the dressing down, "Of all the damn fool tricks! I had to denude this planet of explosive to rectify what you did. Yes, I said 'denude'! There's none left—none whatsoever, and we won't have any in till the next supply ship. We couldn't use atomics, even if we had them on the planet. They'd have killed all the fish in the lake, and that wouldn't have put us on a fine footing with the Quins. By all that's holy, there's only one thing that saved you."

"What?"

Higgins' voice softened. "I probably would have tried the same thing myself."

AT HIS WORDS, Royale gained courage. "Tell me, Doc, how'd you get there—and how'd I get back in the hut?"

"The storm held me up; but I did fly there as soon as I got back to camp and found out what you'd done. I arrived when they were playing pat-a-cake with you as a hamburger.

"The 'copter scared the hell out of 'em, and I got their attention."

"And?"

"I told that big guy who gives the orders you were a cub of mine and that I'd come to undo any damage you'd done. So he explained the situation, and I guessed what the score was. I told him I'd fix things.

"Son, he pepped right up at that and shooed the medicine man away; then he carried you to the hut himself."

"He's a nice guy, Doc, and amazingly receptive to new ideas—some of his people's most cherished legends, he had to toss away. Still, I couldn't shake him loose from the mouse; he hung onto it with religious fervor." The geologist paused and an idea began to take shape. "Doc, you don't

suppose there's a reason for the sacredness of the mouse? Maybe there's an answer to our problem..."

HIGGINS interrupted and the idea unfortunately died. "Don't *you* worry about our little friend. I guarantee that Hamilton and the guys back home will come up with the answer. It's not an 'if' question; it's a 'when.' Anyway, to get back, your Quin friend growled down the whole village and got you taken care of. 'Course, I stood around in the background, innocently turning my flash on and off."

Royale grinned. "Glad you were able to help him, Doc. I have more than a sneaking hunch he was fighting off a power-grab by the witch doctor. Several things he'd said led me to believe it."

"We left him in positive control, anyway. But you know, I thought it very interesting that a race we'd had no contact with could speak Galactic basic."

The younger man swore. "In all that time I never thought to ask him."

"That's what I figured—so I did. He spent a good part of his

youth down near frontier country—and got it from the settlers.”

“Hmm—the eye-witness reports,” the geologist mused, “Y’know, I wouldn’t put it past him to have been spying on us! There’s something about this race...”

“You ought to know, you spent enough time with them. And speaking of time—don’t think this little rest of yours won’t be coming out of your accrued sick leave.”

“Well,” said Royale, “I guess you can’t win ’em all.”

“Son, apparently you can’t win *any* of ’em!”

“What do you mean, Doc?”

“I’d forgotten—this message came for you this morning. Here, I’ll read it. There was the sound of unfolding paper.

“*Climate hot and muggy stop The natives swear it’s earthquake weather stop honeymooning California’ It’s signed ‘Hamilton’!*”

As a Watcher, Elbezed knew that he must not interfere with Earth people, must not let his existence become known to them. Yet, no Njidian ever refused to answer a cry for help!

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POINT OF VIEW:

Mercury

by

Isaac Asimov

DID YOU ever see a beautiful sunset? Many times, I'm sure; yet the next time you see one,

Second of a series of articles. There have been many stories about Mercury — but few have really given any picture of what you'd see there.

you may still stop to look at it. If you see the full Moon on a clear night or the crescent Moon in a starless evening sky, you'll stop and look for at least a moment or two, most likely. The familiar stars on a crisp, clear winter night are well worth staring at, to say nothing of less usual phenomena—such as comets, meteors and Sputniks.

All this is on our own planet where what we see in the sky is what we've always seen. Still, writers of contemporary fiction never weary of describing it and we seldom weary of reading the descriptions.

You would think alien skies would be a thousand times more fascinating, simply be-

The first article in this series, "Point of View", appeared in the June 1958 issue of *Future Science Fiction*. Copies may be had from the publisher for 35¢ each.

cause of the novelties that might be superimposed upon their splendor.

So it's odd, isn't it, that science fiction heroes, inhabiting a thousand strange worlds, hardly ever bother to look at the sky. How many s. f. stories can you think of in which the aspect of other-worldly heavens is realistically described, or even referred to? Casual mention of a green sun, or a hurried word about two moons in the Martian sky, scarcely count. What kind of shadows does a green sun cast; how do things appear in its light? How large do the Martian moons appear to a Martian; how bright; what are their apparent motions?—Are we ever told?

And yet the variations possible, once our Earthly point of view is altered, are infinite and fascinating. For instance, suppose our point of view were Mercury...

The one thing most s.f. readers know about Mercury is that it is close to the Sun and presents only one face to Sol, so that the planet has a Sunside which fries in eternal heat and a Nightside which

freezes in eternal cold. Period.

That's like saying that the Earth turns on its axis in twenty-four hours, so that the Sun appears to rise and set. Period.

In both instances, many details are left out.

LET'S CONSIDER some of those details. If we could neutralize Mercury's motion around the Sun—and keep the planet in one place in space so that we could watch it—we would notice that Mercury rotated on its axis as Earth does, but much more slowly. In fact, it takes Mercury 87.97 (call it 88) days to complete one rotation, from west to east, about its axis.

But Mercury revolves around the Sun, too. The time it takes Mercury to complete one revolution around the Sun is also 87.97 (call it 88) days. There is an exact equality in the times Mercury takes to complete its two turning motions, one about its own axis (rotation) and one about the Sun (revolution).

This is not coincidence. (It would be quite unbelievable if it were). It is rather the un-

avoidable consequence of the tidal effects on a small body induced by a nearby larger body. The Moon's period of axial rotation exactly equals its period of revolution about Earth for that reason.)

Now when one body rotates around its axis, and revolves around a second body in equal periods, then the first body must present only one face to the second as it revolves. (I have given up trying to explain why this is so in mere words, so please just accept the fact. Three-dimensional, moving models might prove the point; but it is my experience that even then a flash of intuition is required.)

BUT LET'S keep our point of view on Mercury and see if that helps. If we consider only Mercury's axial rotation and pretend that the planet is fixed in space with respect to the Sun, and does not revolve around it—then to an observer on Mercury, it would appear that the Sun were drifting slowly from eastern horizon to western horizon. It would complete the trip in 44 days and would then

reappear upon the eastern horizon after another 44 days.

If, on the other hand, we pretended that Mercury did not rotate, but merely revolved around the Sun, it would seem to the Mercurian observer that the Sun were drifting slowly from western horizon to eastern horizon. The sun would complete the trip in 44 days and would then reappear upon the western horizon after another 44 days.

These are motions in opposite directions, so that if rotation and revolution were both proceeding (as they are, of course) the two motions would tend to counteract one another. If the period of rotation were exactly equal to the period of revolution (which it is) *and if both turning motions proceeded at constant angular velocity*, the two apparent motions would *exactly* compensate, so that the Sun would have no apparent motion at all in Mercury's sky. It would remain fixed. That spot on Mercury which found the Sun directly overhead would therefore find it overhead through all eternity. Half of Mercury would see eternal Sun, and the

other half experience eternal night.

THIS SITUATION, however, does not hold true. Mercury's rotation does, indeed, proceed at a constant angular velocity, but the planet's revolution about the Sun does not. In order for Mercury (or any other planet) to move at a constant velocity about the Sun, its orbit would have to be *exactly* circular—and no orbit we know of ever is. Mercury's orbit, far from being circular, is a pronounced ellipse.

When a planet moves about its Sun in an elliptical path, the Sun is located at one of the foci of the ellipse. This focus is not at the center of the ellipse (if it were, the ellipse would be a circle) but is displaced to one side. The flatter and longer the ellipse (the more "eccentric", that is) the further toward one end of it is the focus, (with a second focus symmetrically placed at the other end).

Earth's orbit, for instance, is an ellipse that is so slightly flattened that the Sun is within 1,500,000 miles of dead

center. This isn't bad. To be sure, it means that the Earth is 3,000,000 miles nearer the Sun in January than in July, but this doesn't amount to much in a total distance of about 93,000,000 miles.

Mercury's orbit, however is more eccentric than Earth's. The ellipse of its orbit is considerably more flattened, so that the Sun is located more than 7,000,000 miles to one side of center. And this makes a bigger difference to Mercury than it would to Earth, since Mercury's orbit is only one-third as wide from end to end as is Earth's.

To put it in figures, Mercury can approach to within 28,500,000 miles of the Sun at one point in its orbit; while at the point directly opposite, it recedes to a distance of 43,350,000 miles. (The point of closest approach is called the "perihelion"; the point of farthest recession, the "aphelion".)

It is just this difference in distance between Mercury and the Sun at different points in Mercury's orbit that spoils the neat arrangement of Sunside and Nightside and makes Mer-

cury's astronomy infinitely more interesting.

THE SPEED with which a planet moves depends upon its distance from the Sun. The closer the planet is to the Sun, the stronger the lash of Solar gravity, and the faster the planet moves.

Suppose, for example, that Mercury is at position X in its orbit, and "X" happens to be Mercury's average distance from the Sun (36,000,000 miles). At that point, the planet is moving about the Sun at its average rate of velocity, some 30 miles a second. (In comparison, Earth moves about the Sun at a rate of only 18 miles a second; Pluto only 2 miles a second.)

Suppose, further, that Mercury is headed toward perihelion. As it moves nearer the Sun, its motion speeds up. At perihelion, Mercury is moving 36 miles a second. Passing perihelion, Mercury starts receding from the Sun again until it reaches position Y (on the side of the orbit exactly opposite position X) where once again the planet is at its average distance from the Sun and

moving at its average velocity.

But now Mercury is moving toward aphelion, and its velocity slows. By the time it reaches aphelion, it is moving at only 24 miles a second. After that, it is approaching the sun once more and the planet's velocity increases again. It reaches average velocity at position X; and after that, the whole cycle is repeated.

So we can divide Mercury's orbit into two equal parts: the half from position X to position Y, passing through perihelion, and the half from position Y to position X, passing through aphelion. The two parts are equal so far as distance covered by Mercury is concerned; but *not* so far as time of passage is concerned.

In the orbit's perihelion half, Mercury is moving at a faster than average velocity, so that it completes that half in some 40 days. In the aphelion half, it is moving at a slower than average velocity, so it completes that half in 48 days.

On the other hand, the angular velocity of rotation of Mercury about its axis is *not* affected by the nearness or

farness of the Sun. The angular velocity remains constant.

NOW LET'S get back to the apparent motion of the Sun as seen from Mercury's surface. The apparent east-to-west motion of the Sun (resulting from Mercury's axial rotation) is constant. When Mercury is at position X or position Y in its orbit, and is revolving at its average velocity, the apparent west-to-east motion of the Sun (resulting from Mercury's orbital revolution) just compensates. Thus, when the planet is in those positions, the Sun seems to be motionless. This, of course, is momentary.

When, however, Mercury is passing through the perihelion half of its orbit, and is moving faster than average, the apparent west-to-east motion of the Sun more than compensates; and the Sun, overbalanced, drifts eastward.

During the aphelion half of Mercury's passage, on the other hand—when it is moving more slowly than average—the west-to-east apparent motion of the Sun less than compensates; and the Sun, underbalanced, drifts westward.

The drift is quite a large one, too, amounting to a total of $47\frac{1}{2}$ degrees. (You can get a notion of what "degrees" means when I tell you that the distance from horizon to zenith is 90 degrees.) In other words, the Sun can move from the zenith about 24 degrees (a quarter of the way) toward the eastern horizon, back to zenith, then 24 degrees toward the western horizon and back to zenith again.

FOLLOW the motion. Suppose you are standing on Mercury's equator, so that—at the point midway between aphelion and perihelion—the Sun is quarter way down toward the western horizon. The Sun's apparent diameter is then 87 minutes—a minute being $1/60$ th of a degree. (Since the Sun, as seen from the Earth, is only 32 minutes in diameter, it means that the apparent area of Mercury's Sun at this moment is 7.1 times as great as that of the Earth's sun and is delivering 7.1 times as much radiation.— You get 7.1 by taking the square of the ratio $87/32$.)

Now as Mercury moves to-

ward perihelion, the Sun drifts eastward—that is toward zenith—slowly at first, then more and more quickly. As it moves, it grows in apparent size. After 20 days, the Sun has reached the zenith and Mercury is at perihelion. The Sun is now a fat 104 minutes in diameter and is $10\frac{1}{2}$ times as great in area and energy radiation as is Earth's Sun.

But the Sun still moves eastward past the zenith, shrinking now and slowing. In another twenty days, it has moved quarterway down to the eastern horizon and is back to the size it was when we began.

Now Mercury enters the aphelion half of its orbit, and the Sun starts slipping westward, back toward the zenith but moving more slowly this time and shrinking. It takes 24 days to get back to the zenith; and by that time it is only 70 minutes in diameter, and is only delivering 4.6 times as much energy as Earth's Sun. Another 24 days and it is back quarterway down the western horizon, grown back to 7.1 times our Sun.

The whole cycle takes 88 days, naturally, since that is

the period of Mercury's revolution. There is the 40 day big-Sun passage one way, then the 48 days small-Sun passage the other.

All this assumes that the axis about which Mercury rotates is perpendicular to the plane of its orbit of revolution. If this is so, then the Sun's motion would be a straight line east and west.

If the axis were inclined away from the perpendicular (as the Earth's axis is, for instance) then the apparent path of the Sun in the sky would be not a straight line but an ellipse. The further the axis was inclined, the fatter the ellipse would be. In actual fact, though, astronomers believe Mercury's axis to be just about vertical and to be inclined no more than one degree at the outside. If this is so, then the departure from a straight line would probably not be noticeable to the casual observer.

SUPPOSE, now, you were to move from your spot on Mercury where the Sun was directly at zenith at perihelion and aphelion. Suppose you got into your buggy and traveled

east along the equator. The whole wobbly Sun-cycle would move west. In fact, if you traveled about 1760 miles to the east (the circumference of Mercury is 9,430 miles) the Sun would slip so far westward as just to dip beyond the western horizon at one end of its swing, and be just about halfway to the zenith at the other end. If you went any further east, then for part of the Sun's cycle of movement, it would be behind the horizon and night would fall.

If, from your original position, you were instead to travel 1760 miles to the west, the same condition would result—except that now it is the eastern horizon behind which the Sun dips. (Naturally, in discussing the horizon, I presuppose a flat, featureless sea-level horizon. Uneven ground—or, worse yet, a mountain range—would complicate things.)

There is thus an area of Mercury with an extreme width of 3520 miles at the equator, and narrowing to either pole, upon which the Sun eternally shines. This is the Sunside—but it is *not*

equal to half the planet. Because of the back-and-forth movement of the Sun (called “libration” by the way, from the Latin word “to balance”—and if you’ve ever seen a weighing-balance swinging back and forth, you’ll see the connection) the Sunside covers only about 37 percent of the planet. The area of the Sunside amounts to 10,700,000 square miles, which is about the area of Asia.

(If the axis were inclined to the plane of revolution, a further chunk would be cut from the Sunside at the northern and southern edges. But since Mercury’s axis is just about perpendicular, the amount of territory so lost is negligible.)

Not all positions in this “Asiatic” area of eternal light are equally hot, of course. The further north, east, south or west you are from the midpoint of the area, the further the Sun is from zenith and the lower the amount of radiation it delivers per unit area of Mercury’s surface. And, of course, the area as a whole would have a blazing “summer” during the perihelion half of the orbit, and a some-

what cooler blaze in the "winter" of the aphelion half of the orbit.

LET'S LEAVE the area of eternal light, and move along the equator toward the east. We enter an area now where the Sun, in the westward portion of its drift, dips completely below the horizon. If we are still pretty near Sunside, the Sun dips just a little below and then returns rather quickly. As we move further and further east, the Sun dips further and further below the western horizon in its cycle, and takes longer and longer to come back.

About 585 miles east of the edge of Sunside, we reach a point where half the Sun's swing is below the horizon and half is above. The "day" and "night" are now of equal length, 44 days each. (There is no inequality effect due to the differences in Mercury's motion because the swing above the horizon is from perihelion to aphelion, while the swing below is from aphelion to perihelion. Such a division is chronologically symmetrical.)

At this point, moreover, the Sun rises at perihelion and sets at aphelion, shrinking steadily while it is above the horizon.

IF YOU PROGRESS further along the equator to the east, the Sun moves still further behind the horizon and the "nights" become longer than the "days." By the time you have progressed another 585 miles, you have reached a point where the Sun just begins to top the horizon at the uppermost portion of its cycle. You have a continuous night, broken at 8 day intervals by the short-lived glow of part of the Sun on the horizon. If you go any further than that, you enter the Nightside of Mercury, where the Sun never shines.

If, instead of all this, you had started on the western rim of Sunside and traveled west along the equator, the same phenomena would happen in reverse. The Sun would rise and set in the East. When you were at the point of equal "day" and "night", the Sun would rise at aphelion and set at perihelion, fattening contin-

ually while it was above the horizon.

(This difference in behavior of the Sun—mostly shrinking in the eastern day-night area, and mostly swelling in the western day-night area would probably make for a different, but symmetrical, pattern of temperature changes during the 8-day cycle in each area.)

These day-night areas are *not* the “twilight zones” beloved to s.f. authors; they are “zones of east-west libration” and have precious little twilight about them except possibly at the polar ends. Each zone extends from pole to pole (barring slight inclinations of the axis) on opposite sides of Mercury between Sunside and Nightside. Each zone of libration is 1170 miles in width at the equator, and contains an area of 3,600,000 miles—which is equal to the area of the United States plus Alaska. Together, the two zones of libration make up $\frac{1}{4}$ of Mercury’s surface, while Sunside and Nightside each occupy $\frac{3}{8}$.

Nowhere in the zones of east-west libration is there a “twilight area” that would be comfortable to man. Near

Sunside, the short nights would not moderate the broiling days. Near Nightside, the short days would not moderate the freezing nights. In the middle, there would be a 44-day “day” which would grow far too hot, and a 44-day “night” which would grow far too cold.

R. S. RICHARDSON in one of his articles (one that did not, alas, appear in *As-tounding*) pointed out, however, the possible existence of a true miniature “twilight zone” on Mercury—two of them, in fact.

If Mercury’s axis of rotation were exactly perpendicular to its plane of revolution, then at either pole of the planet the Sun would sit exactly at the horizon, its globe bisected (assuming that level, featureless horizon I mentioned earlier). The Sun would slide back and forth along the horizon in the usual 47 degree arc, growing bigger and smaller as it did so; but it would remain at the horizon at all times. (If there were an atmosphere, refraction would upset this neat scheme of things, but Mercu-

ry's atmosphere is negligible at the poles and need not be considered.)

If, however, Mercury's axis of rotation were slightly inclined (say, by one degree), then for half the revolution, the axis (which would maintain a fixed position in space) would tilt one degree toward the Sun; and for the other half it would tilt one degree away from the Sun.

If you were standing on the north pole (or south pole) of Mercury, you would then be in a position to watch the Sun inch its way laboriously upward till it just cleared the horizon, then start sinking, just as laboriously, until the last bit dropped out of sight. The whole cycle would take the usual 88 days, of course; and while doing this, the Sun would still wobble in the usual east-west libration. The exact pattern of its waxing and waning would depend on whether the axis at that particular pole was pointing toward the sun at perihelion, at aphelion, or at some intermediate position in the orbit.

The zones of north-south libration at either pole would

be small, but there would be an area of perhaps as much as a hundred square miles that would never get more than a horizon's worth of Sun, and never get more than a few hours of complete darkness at a time. The chances for a comfortable temperature would be quite good there (on Mercury yet!).

SUNRISE on Mercury, in any of the zones of libration, ought to be spectacular. Mercury is generally considered to have no atmosphere, but that really means "no atmosphere of the Earth type." When the Sun shines down, vapors of volatile solids, such as sulphur, iodine and mercury, must exist near the surface. However, in any decent period of darkness, such vapors would freeze out, so that the Sun would rise on a truly airless world, and none of the finer points of the Sunrise would be lost.

The Sun of Mercury moves at an apparent rate of only 1/88th that at which our Sun moves. Our Sun tops the horizon two minutes after the first scrap shows. The larger

and slower Mercurian Sun takes anywhere from 100 to 140 minutes to do the same, so there is plenty of time to observe borderline phenomena (with appropriate optical precautions, of course.)

For several hours before the rising of the Sun, the corona would gradually come into view, pearly white and beautiful. It would brighten as the lower regions came into view and its streamers would be in constant restless motion. In a teen-age novel which I wrote a couple of years ago, I had my characters call this "the white ghost of the Sun"; and I have no doubt but that a generation of space-travelers will some day rank this view of the corona among the wonders of the Solar System.

Then, just before the upper tip of the Sun itself topped the horizon with its white glare, the prominences at the edge of the photosphere would appear. These would be a bright red and for a short time they would dominate the scene. ("The red ghost of the Sun" my characters called this.) After that, the unbearable glare of the Sun itself would arrive.

Of course, if the horizon is broken by mountains, affairs become more complicated and there is additional room for the spectacular. The top of a mountain, properly placed, might glow unbearably as an isolated point in the light of the Sun which had not yet hit the valley.

Events at sunset would be the reverse of those at Sunrise, except that a period of Sun would make the various vapors form; and these, at the setting, might blur out the finer effects. (In fact, if Mercury were completely airless at all times, the corona and prominences ought, theoretically, to be visible even in the full glare of the Sun, whose light would not be scattered into a sky-blur by an atmosphere.)

THAT LEAVES one remaining area of Mercury. There is still the $\frac{3}{8}$ of its surface that lies beyond the zones of libration, and directly antipodal to the Sunside. This area (another Asia in size) never sees the Sun at any time. It is probably the only sizable area on any planet or satellite in the System that *never* sees the

Sun (even through clouds) and it is probably the coldest surface in the System for that reason, despite its nearness to the Sun.

Is there anything to observe in its frozen skies?

Yes, of course!

There is nothing there as grand and as overpowering as Mercury's Sun, either at its rising, or setting or in its waxing or waning; but a few items in the night sky of Mercury could certainly be considered, in their way, to be more quietly beautiful.

IN THE FIRST place there are the stars. These are more beautifully bright and sharp than they are as seen from the Earth, since on Mercury's Nightside there is no atmosphere to blur them and set them to twinkling.

(Incidentally, all that can be seen from the Nightside can also be seen from the zones of libration during the dark period. And, in fact, it could all be seen even when the Sun is present, except for the possible blurring effect of the vapors rising in the Sun's heat, and the general difficulty of having

solar glare blunt eyes and instruments when observation of much dimmer bodies in the same sky is in question. If the stars could be observed easily with Mercury's Sun in the sky, the backing and filling of the Sun against the starry background—which is itself moving in a different pattern—would set up a fascinating and intricate display.)

From the viewpoint of the stars, Mercury's rotation of 88 days is a straight fact, and its revolution about the Sun in the same period does not complicate the picture. The stars march across the skies of Nightside from east to west, just as our stars do, but at only 1/88th the pace of our stars. It takes the stars 44 days to travel from eastern horizon to western horizon.

However, they are the same stars we see from Earth, in the same order of brightness and in the same arrangements—the same familiar constellations—and there at least would be a breath of the familiar to the lonely space-traveler standing on Mercury's surface and looking upward. So far as the stars are concerned, the

Solar System from end to end is virtually a point, and our movements within this point lack significance.

BUT THE planets in Mercury's sky are another thing altogether. They show differences from the pattern as we see it here on Earth—a small difference in some ways, but a tremendous one in others. For one thing, the various planets are all further from the Sun than is Mercury itself. In Mercury's sky, therefore, there is no morning star or evening star. There is no planet nearer the Sun to play the role for Mercury that Venus and Mercury, itself, do for us. This simplifies the necessary description of events.

If the planets were motionless in space, they would rise in the east with the stars, move with the stars, and set in the west. However, the planets have a proper motion from west to east as they themselves circle the Sun; and this counteracts the east-to-west motion dictated by Mercury's rotation/revolution. However, all the other planets move more slowly than does Mercury, so that

no planet can completely compensate for the apparent east-to-west motion. They therefore all rise in the east and set in the west, but they move more slowly from horizon to horizon than do the stars.

The farther a planet is from the Sun, the more slowly it moves, and the longer is the orbital distance it must cover to circle the sky completely. The farthest planet visible by naked eye from Mercury is (as on Earth) Saturn. In 44 days, Saturn only completes about 1/240th of its own revolution, which would show up as a lag (in comparison with the Mercurian stars) of about 1 1/3 degrees. This would add about 7 hours to Saturn's stay in the sky.

Furthermore, Saturn would lose another 7 hours while invisible from the Nightside, so that if Saturn rose with the star Castor on one occasion, it would rise 14 hours later than Castor on the next occasion and would be 2 2/3 degrees further east. In this way, Saturn would make a complete west-to-east circle of the skies, rising once again with Castor after about 122 star-circlings.

This reflects the fact that Saturn has an orbital period of 30 Earth years, and that it therefore revolves about the Sun once for every 122 times that Mercury revolves about the Sun.

MARS, ON the other hand, during the 44 days between the rise and set of the stars has completed 1/16th of its revolution (since it moves considerably faster and has much less ground to cover than Saturn) and has lagged 23 degrees. To overcome that takes 5 days of additional Mercurian rotation, during which Mars lags a bit more, so that altogether Mars stays in the Mercurian night skies for a total of 50 days between rising and setting and, of course, lags another equal period before rising again. It makes its circuit of the skies in just about 8 of Mercury's rotations.

Jupiter is intermediate in this respect. It lags enough to remain in the night sky an additional day, loses a second day while invisible, and makes its circuit of the skies in 49 of Mercury's rotations.

Mars, Jupiter and Saturn are all somewhat less bright as seen from Mercury than as seen from Earth (ignoring the dimming effects of Earth's atmosphere.) After all, at their nearest approach to Mercury they are still 50,000,000 miles farther away than they are from Earth at their closest approach to our planet.

In the case of Saturn—which is 750,000,000 miles away from Earth at best—an additional 50,000,000 miles isn't so much. Seen from Mercury, it is 87 percent as bright as seen from Earth. Jupiter is 78 percent as bright. Mars, however, which can approach the Earth as closely as 35,000,000 miles finds an additional 50,000,000 miles a considerable distance. Since brightness varies inversely as the square of the distance, Mars as seen from Mercury is only 17 percent as bright as it is seen from Earth.

These declines in brightness, however—even in the case of Mars—still leave the planets on a par with the brightest stars, and Mercury does not seriously lose by it.

I HAVE DELIBERATELY left two planets visible in Mercury's skies out of consideration—for the reason that they are the most interesting. I have naturally saved them for the last.

First, there is Venus. Venus is the brightest object in Earth's sky, outside the Sun and the Moon. It is ten times as bright as Sirius, the brightest star. Yet Venus achieves this distinction under difficulties. Since its orbit lies closer to the Sun than does Earth, Venus lies directly between us and the Sun when it is closest. It then presents its night-side to us. It is in the "New-Venus" phase, so to speak, and therefore dim—a thin crescent at best—and lost in Sun glare.

When Venus is in the "full-Venus" phase, on the other hand, it is directly opposite us (on the other side of the Sun, about 150,000,000 miles away—six times as far away as at its closest approach) and is still lost in Sun glare.

Venus is thus in an in-between position; therefore, Venus is at its brightest to us when it's at a point in its orbit

far enough removed from the Sun (from our own point of view) to be clearly visible hours after sunset or hours before sunrise. It is then a thick crescent and the brilliant jewel of the sky.

Now on Mercury, the situation with regard to Venus is reversed. Venus' orbit lies outside of Mercury's, so that it presents the "full-Venus" phase when Mercury is between it and the Sun—just when Venus approaches most closely, in other words—and at its closest approach, it is only 24,000,000 miles away.

On Mercury, therefore, Venus is, at its brightest, fully eight times as bright as it ever appears on Earth. It is actually 1/400th as bright as our full Moon seems to us.

This bright jewel lingers in the Mercurian skies for a full 64 days between rising and setting. It does not maintain its full brightness of course, or its full apparent size, either; at zenith, it could be as much as 32,000,000 miles away; and at rising or setting as much as 60,000,000 miles away. Still, Venus, as seen from Mercury, would probably never dim to

the point of merely being as bright as it appears from Earth.

EVEN MORE remarkable than Venus, in a way, is the remaining visible planet of Mercury's skies—the planet Earth.

Earth, as seen from Mercury, is not nearly as bright as Venus. Being farther from the Sun, Earth receives less light than Venus; and the light Earth does get is less reflected, since it lacks Venus' cloud layer. And of the light that is reflected, less gets to Mercury, since Earth is farther from that planet than is Venus. All in all, Earth is only 1/13th as bright as Venus to the Mercurian observer. Earth would still be nearly as bright as Venus, at its brightest, seems to us on Earth.

Earth, however, has a special attribute that Venus does not have. Earth has a Moon.

When the Earth-Moon system is as close as it can get to Mercury, the Moon—as seen by the Mercurian observer—can be separated from the Earth by 17 minutes of arc. This is equal to a trifle over

half the distance across the face of the Sun as seen from Earth, which makes it a good and clear separation. Furthermore, the Moon would be clearly visible to the naked eye. It delivers 1/100th the amount of light to Mercury that Earth does, which means that it would appear as a moderately bright object—similar in brightness to an average star.

Furthermore, a Mercurian observer could easily understand that he was looking at what was essentially a double planet, for the Moon would visibly circle the Earth. As the two bodies would move from horizon to horizon, the Moon would move toward Earth. It would pass close above Earth; (the plane of the Moon's orbit around the Earth is inclined to that of Mercury's about the Sun sufficiently so that the Moon would seldom appear to pass immediately in front of or behind the Earth) move out in the other direction; come back again; pass close under Earth; move out in the first direction—then repeat the cycle. The system would be contracted at the horizon—partic-

ularly when Mercury was at perihelion—since the distance between Mercury and Earth would then be 88,000,000 miles as compared with a close approach of 50,000,000; but these maneuvers would always be visible.

Since the Earth-Moon system remains in Mercury's Nightside sky for about 52 days, while the Moon circles the Earth in 27 days, there would be time during a single continuous viewing to see the

Moon make not quite two complete revolutions about the Earth.

So there Earth is, putting on the kind of celestial show for Mercury (and for Venus and Mars, too, for that matter) that no planet puts up for us—and yet I've never seen this mentioned in science fiction. Surely that's an unfair snub to the Mother-planet on which we live.



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≡ Editorial ≡

YESTERDAY'S WORLD OF TOMORROW: 1928 III

AT FIRST glance the cover of the May issue looks like one of those sensational bits of nonsense with which science fiction was to be plagued in years to come. Frank R. Paul painted a terrifying scene from "The Octopus Cycle" by Irvin Lester & Fletcher Pratt, showing a swarm of decidedly over-size octopi—"walking" on their tentacles, they exceed twenty feet in height—coming out into a jungle clearing. Natives and a white man in pith helmet are very sensibly running for it; one native has been caught by the foremost critter.

It's not quite so bad as it

sounds, as a character explains:

"...My observations, though somewhat scanty, lead me to the conclusion that we are dealing with a hitherto unknown member of the great mollusk family. The family includes the octopus and the oyster..."

"The beast that was killed at the camp had a larger body than any known member of the family, and tentacles at least fifteen feet in length and correspondingly powerful. A protective covering of chi-

tin appears to have been developed, and due to the lack of any internal skeleton and the fact that the muscles must base on it, this protective covering to its body is of a thickness and strength to be quite impervious to rifle bullets. The one we killed had received a bullet full in the eye, which passed through into its brain. . . .

"They have eight tentacular arms, covered on the lower side with the usual cephalopod type of suckers, the center of each sucker being occupied, as in some species of octopus, by a small, sharp claw. . . .

"I am unable to say . . . what device they have arrived at for breathing; air; probably some protective covering keeps the gill-plumes moist, as in the crayfish, making access to water at times necessary."

LATER IN the story, the swarm does have to return to water—presumably to prove

the point; and here they are attacked and destroyed by a swarm of killer whales, whose providential appearance is explained thus:

"A sort of wireless telegraphy seems to exist among animals with regard to neighborhoods where food can be obtained in quantities, and just as you will see the condors of the Andes flock to where food is, the killer whales gathered around this visitation of giant cuttle fish."

If this sounds all too pat, there is one memorable analogy in American history. When the Mormons were about to harvest their first crop in Utah, all seemed lost—a swarm of locusts descended upon them. Then—seemingly, a miracle—suddenly wave after wave of sea gulls appeared, and devoured the locusts. The flock seemed to come out of nowhere, for they were hundreds of miles from their natural habitat; and when they had finished their feast they departed. I am told that you will find a memorial to the

sea gull in Salt Lake City.

All in all, perhaps the worst thing about the "Octopus Cycle" was the artwork, which gave the impression that these were merely giant octopi on land. This was Fletcher Pratt's first appearance in science fiction, and may be among the items he repudiated in later years as "bad stories". Actually, it reads quite well today; and if there are fundamental flaws—perhaps Willey Ley could tell us about that—they seem most likely to be those of omission. (I can't imagine the critters being able to stay out of water as long as they do in the story—even granting the explanation of their breathing apparatus—for one thing. And I wonder how their eyes could take direct sunlight for periods as long as they do. Then there's that old debbil, the mass-weight ratio; how would that effect a chitin-bearing, twenty foot octopus?)

BOB OLSEN'S "Four Dimensional Robberies" is a sequel to "Four Dimensional Surgery" in the February issue (all dates are 1928, and the magazine is *Amazing Stories*,

unless stated otherwise). In that tale, the doctor had invented hyperforceps, by means of which he could remove internal organs without piercing the patient's skin. Obviously, this gadget would be most helpful to burglars—and that is just what happens. The culprit removes the contents of safe-deposit vaults without opening them.

In stories of this type, the "fourth dimension" isn't a "place" where one can find other worlds and adventures; and once you get the idea of what can be done with a gadget like the "hyperforceps," there isn't much room for surprise. It was very probably for this reason that authors took to the hypothesis of the fourth dimension as a plane of existence to which our heroes could travel through this or that magical machine. All thoroughly fallacious, but fun at times.

"THE MASTER ANTS"
by Francis Flagg is not, as you might suspect, a "giant ant" story; the ants do come somewhat larger than any we see around—around the size of a chipmunk, I'd say; which

may be larger than is possible but not flagrantly so, considering the usual "giant ant" story. What has happened is that the ants have increased in intelligence, and Man has not. (There's a time machine in the story, but it's just a device for getting the lead far enough into the future for all this to have happened.)

The main flaw with this "intelligent insects taking over the century after tomorrow" is that the ants, beetles, roaches, etc., have had millennia in which to develop intelligence comparable to or greater than human; but there's no indication that the ant of 1958 is any different from the ant as first observed by Man. (I'm purposely overlooking differences in the various species, since the principle holds true, anyway.) I'm glad to note that the idea seems to have been buried; in these days, if insects suddenly start increasing in intelligence, it can't just "happen".

IN THE JUNE issue, Flagg discovered the "Blue Dimension" separated from us by different rates of vibration; Dr. Keller's "Biological Experi-

ment" deals with a future wherein people are sterilized, and babies are produced artificially (but "mother instincts" and "father instincts" cannot be suppressed forever, so finally revolt breaks out); and Harl Vincent's "Golden Girl of Munan" offers a potpourri of secret civilization (descendants of a shipload of "undesirables" exiled when the world government was set up); a liquid which disintegrates matter; an alloy which absorbs potential energy and stores it up; a "professor" who comes up with astounding inventions and discoveries on every other page; and a girl (see the title) who is a sweet and pure and wonderful as the society around her is evil and malignant.

Actually, Doc Keller's tale isn't so bad as all that; and it's a first, the prototype of many stories to come. At the time, the idea itself had considerable power; nor is there any question that the suppression of parent instincts" leads to many ills. But today, "A Biological Experiment" seems pretty naive.

Anyone for the good old days?
RAWL



**the
last
threshold**

by Kate
Wilhelm

Was the fact that he vanished now and then sufficient legal grounds for declaring Peter Wainwright incompetent?

PETER WAS aware of the tension in the house the moment he entered. Aunt Emily fluttered even more than usual, and Uncle Walter kept peering over his paper at him. Dinner had been a nightmare. They had tried so hard to appear casual with inane comments about the weather, about the Albertson's redecorating, about everything but what was on all their minds. Especially avoiding the happenings of earlier in the day which he knew they must have been told by now. Peter had played it out with them, as a well-bred young man was expected to do. Behind his thick glasses his eyes were crinkled with amusement as he had the thought that he had mumbled answers to silly questions in the most traditionally conventional way.

No male member of the Boston Wainwrights ever spoke outright, he must mumble and throw in a goodly number of 'harrumphs', and 'ah's'. Only the females were allowed to speak clearly; and this they did—in the most piercing, strident tones—driving home point after point until their case was settled irrevocably. But did they let it rest there? They did not. After reaching this elusive goal, they quickly re-

grouped their arguments and presented them again.

Peter was glad that Aunt Emily was the outsider of the family; he couldn't have stood living with her had she been a real Wainwright. As it was, Uncle Walter harumphed and she twittered and not much was ever accomplished in the way of conversation. Briefly, he wondered if he had been a true heir to the customs before the past few months had changed his life. He guessed so. Everyone commented, disapprovingly to be sure, on the great change in Peter. Aunt Emily was watching him expectantly. She must have said something directly to him.

"I beg your pardon, Aunt Emily?"

"Oh, dear. You're not leaving right now, are you?" She was twisting her ring nervously, as was her habit when especially anxious about something.

"Leaving? Of course not. I'm enjoying an excellent brandy after a hard day's work." He wondered that she never knew when he poked fun. Like water, he decided, off the duck's back.

"I mean...that is..." She glanced hopefully at Uncle Walter. He passed it right back, however, and retreated behind his paper. "Well,

there are some people coming over later, and we hoped that you were planning to stay home."

"WHO?" HE EYED them suspiciously. They must be up to something this time, something more involved than the fatherly talk he had with Uncle Walter several weeks back. He still grinned at the memory of his uncle at the other end of a fatherly talk.

"Well, your Uncle Horace and Aunt Martha, and Cousin Jason and Marian, and a friend of theirs." She lifted her brandy and gulped it down quickly. Then, her face turning a fiery red, she fled from the room.

Thoughtfully Peter watched her leave. A council of war, no less; and a right formidable council at that, he conceded. So they had finally mustered in full strength to face him. And they were bringing a witness to referee the battle. "Psychiatrist or priest?" He wasn't aware of having spoken aloud until Uncle Walter grunted.

"I said, is he a psychiatrist or a priest? Do they intend to treat me or exorcise me?"

"Nonsense, utter nonsense." Uncle Walter returned to his paper, evidently unaware that he was holding it upside-down.

Aunt Emily didn't return until the relatives arrived in a body. Besides the friend, they had brought along Stella. She greeted Peter sadly and patted his hand in a consoling manner. She used her left hand—lately a habit with her since it now exhibited the famous Wainwright diamond. The diamond passed from bride to bride like a family curse thought Peter.

STELLA sat beside Marian on the couch. In the confusion of the small talk that went along with getting settled, Peter mused about the resemblance between the two women. Fifth or sixth cousins, they might have been sisters. Keep it in the clan, he thought. Don't let an outsider get a dirty finger in the Wainwright money. All at once he had a great respect for Uncle Walter, who had gone beyond the lineage to find a bride. Grafted new wood on the family tree. That, decided Peter, called for a toast. He refilled his brandy glass and took another one to Uncle Walter. Amid the startled looks, and the obvious embarrassment of his uncle, he touched glasses with him and drained his glass. Then very ostentatiously he returned to his seat by the fireplace and closed his eyes.

There was a momentary silence until Aunt Emily asked in her timid manner, "Peter, dear, have you met Mr. Daniels?"

"No, Aunt Emily, I have not. And right now I don't really think I care to." So he wasn't a doctor.

THE INTRODUCTION was made then and Daniels extended his hand. After a brief, but telling pause, Peter resumed his seat without touching the outstretched hand.

There was a general rumble at that, and Aunt Emily looked so genuinely distressed that Peter explained to her, "Sorry, dear, but I don't think he likes me; and I've adopted a new rule that I'll not pretend to like people I don't, or who don't like me. Life's too short for that kind of hypocrisy."

He thought about what he had said and decided that it covered the ground very nicely. He heard Marian sniff; impulsively, he turned to her and added, "And you can keep your moth-eaten ties from now on. Did you realize that for the last three Christmases you have given me identical ties? Must have bought a carton of them wholesale." He finished muttering the last to himself as the voices drowned him out.

"See. The man is insane."

"I won't stay here to be insulted."

"Peter, dear, you really aren't well."

"Please, please, everybody! Nothing will be accomplished by our losing our tempers." This last was from Mr. Daniels.

The grumbling finally subsided as he held the floor. "Now, please, all of you; let me talk for a moment." Daniels waited for a second and then turned toward Peter. "Now, Mr. Wainwright. I'm going to tell you right off that I am an attorney. I was hired to start proceedings against you on the grounds of mental incompetency."

There was another outburst at this revelation of strategy, and again Daniels outwaited them. "I wasn't to let you know this until the case was well along the way. However, after this demonstration, I feel that the best way to handle this is by obtaining your co-operation to reach an equitable solution."

PETER EYED Daniels warily. He hadn't liked the man before, but now he felt a grudging admiration for him. Anyone who could silence that mob when they had once got going good was a person not to trifle with. With a coolness he didn't

feel he asked, "And how do you go about establishing the fact that I am mentally incompetent?"

"It is an involved legal process which I hope we can bypass. If you will give your consent to an appointment with any psychiatrist, I am sure that the matter can be settled with no publicity."

Peter began to laugh then. "I'm sorry," he said, "but this whole thing is so ridiculous. They claim that I disappear; therefore, I—not they, mind you, but I—must be insane." Again he laughed.

Daniels waited patiently before answering. "Two weeks ago, I would have agreed with you wholeheartedly, Mr. Wainwright; but now, I just don't know." He eyed the assemblage bleakly. "Frankly I thought it was merely a scheme to ease you out of the family company. I'm still not convinced that someone isn't pulling an elaborate hoax. But," and he emphasized the point forcefully, "now what I'm wondering is how it is being done, as well as who is doing it."

After a brief pause, Peter shrugged slightly. "Suppose I do agree and see a psychiatrist? I'm no more crazy than anyone else in my family, not as much as some. Erratic, different, eccentric—all these

I'll grant; but incompetent? No."

"Then, if the doctor agrees with you, as far as I'm concerned the thing is settled." Daniels sighed and hooked his thumbs in his vest in the accepted legal manner. "I might as well tell you now that for the past two weeks I've had you followed; and unless my operatives are among those to be considered insane—because they claim that you actually disappear—their testimony would do much to prove that you do vanish."

PETER CLOSED his eyes dreamily. "I can just see it now. You on one side of the judge's bench and my attorney at the other. And a squirming witness in the middle trying to convince a jury that he actually saw me vanish. You know," he opened his eyes owlshly behind the lenses of his glasses, "I believe that trial would be more fun for the newspapers than any congressional hearing ever held. You could become famous, Mr. Daniels."

Daniels nodded, "I've thought of all the ramifications, also, Mr. Wainwright. Such a farce would very likely ruin anyone connected with it."

Jason suddenly har-rumphed, and so explosive was it that even Marian, who

of all people should be used to it by now, jumped. "Har-rumph, Peter, my boy, you should think of us as your friends and family. We're trying to help you." It ended going down hill as did all his speeches.

"Yeah! Help! you want me locked in an institution. Maybe the psychiatrist would come to the conclusion that all of you are really having a mass hallucination. I know—you are trying in your subconscious minds to forget me, because you hate me for being my father's heir to the majority stocks; so you are having the hallucination that I vanish." Again he laughed at the stricken looks, the angered looks, and the murderous looks that played among their faces.

"I'm afraid," said Daniels, "that the list of persons who have been witness to this extraordinary feat is growing too long for that. Today we added three of your own clients who were having cocktails with you at four-thirty."

"And," countered Peter, "would they admit to anyone but themselves that while they were at a bar they saw me vanish? I think they would admit that while their attention was elsewhere I managed to slip away without their noticing. In fact, I think that they would convince

themselves that such was the case before they would admit I actually vanished."

Jason started to make another speech, but Daniels interjected smoothly, "You are correct. No one will knowingly be made a fool of when a simple little lie will make his story acceptable to society."

Several dissenting voices were raised at this, and he added, "I asked them if they would testify. They claim now that he left while they were admiring a painting."

"See," said Peter simply.

"You little shrimp! I just wish you were twenty pounds heavier and could see without those glasses. I'd teach you to be so smug." Jason forgot to clear his throat and mumble and for a second sounded almost human, so great was his anger.

"WELL, WELL," murmured Peter approvingly. And then at the apoplectic redness of the other's face he held up a restraining hand. "Wait a minute. Suppose—purely, conjectural you understand—but suppose that I admit that I *do* vanish. Why do you object so strenuously?"

Surprisingly, Aunt Emily was the first to answer. "You really shouldn't do it, dear. You might get hurt." She

smiled at him timidly and then went on more brightly, "But, if they do take away the company, you could always go on the stage. Houdini made a fortune, and he wasn't nearly as good as you are." She looked at the outraged inlaws defiantly. "Well, he wasn't!" Primly she resumed her seat by Uncle Walter.

"Harrumph, nonsense, utter nonsense," was the only response he gave.

Stella was the next. "You should give it up, for my sake. How does it look to have one's fiancée disappearing? What must people say?" The martyred look on her face was out of place there. Peter had the impression that she was biting her lip trying to force tears; but they never came, so she had to be content with a deep sigh.

Then Marian added her piece. "It's bad for business. Jason has as much at stake in the company as any of the rest of you, and you can do nothing but harm by such juvenile tricks." Her booming voice was never in better form, so Peter turned from her hurriedly and looked expectantly at Uncle Horace and Aunt Martha, who had somehow got lost in the shuffle. The long silence had obviously been hard on Aunt

Martha for now she loosed a diatribe.

"Outrageous. Scandalous. Your dear father and mother must be writhing in their graves. Such school boy antics bespeak a mental condition. A long rest is clearly indicated in such cases..."

PETER TURNED from her deliberately and poured another brandy for himself trying to shut out the raucous voice. Finally, as she appeared to be prepared to continue indefinitely, he turned to the lawyer and shouted, "And, Mr. Daniels, what would your comments be?"

Aunt Martha ceased abruptly then.

"First of all, I'd want to know where you go. And then how you get there. And then why you do it. I think that would be enough to start with."

Wordlessly Peter got a clean goblet and poured it to the brim with the amber liquor. He took it to the attorney and silently they drank while the others watched.

"You, sir, are a gentleman. I would like to shake your hand now, if I may. I realize that you are hired to do me dirty, but you are a gentleman, nevertheless."

The two men shook hands and then Peter wagged his

finger at his relatives. "Here," he staggered slightly as he waved his arm about the room, "all they think of is what people will say, or what it will do to business. Did they ever once ask me where I went, or how, or why? They did not. They didn't care. It takes a stranger to try to find the reason."

He was aware that he shouldn't have been so liberal with the brandy, but it was too late now to think of that. He leaned against the bookcase for support as he confided to Daniels, "The truth is that I can't help it; I just go. And I never know when I'll go. As to where—you wouldn't believe it, and I'm too drunk to try to explain it to you, so I'll just say to never-never land. And why? Because a girl wants me to. So there it is."

"Peter! What do you mean? What girl?"

For a moment he had forgotten about Stella, but her shrill voice brought her back to his mind instantly. "Why the girl who dreams about me, naturally." As he left the scene, he had the impression that she was saying, "I'll never marry you, you Jekyll and Hyde." He wasn't too sure that she said it, but he hoped so; it was such bad form for the man to break the engagement.

II

DIANNE welcomed him with a warm moist kiss and a garland of tiny roses. "See, I made them for you before I brought you over." She hung them around his neck and laughed delightedly at the effect. "Now you look gallant and romantic the way a dream should. Come on," she said, "let's float over the moon and laugh at the stars and dance on the milky way."

Impishly she was out of his reach even as he clutched the diaphonous cloud of material that clothed without concealing her long vibrant body.

He watched her hover over him for a moment; and then he, too, was drifting lazily over the moon-flooded valley that existed only because she had the imagination to will it so.

"Wait for me," he cried to her as she kept the distance between them an inch too long for him to reach her. Tantalizingly she laughed again and swooped around him, and under him, and finally into his arms. Their gliding, flying was done effortlessly as if man had been fashioned for the air after all. The delicious sense of well-being and happiness that were a part of this place en-

veloped Peter completely. She was Dianne the huntress who had reached out and caught herself a man. She was desire and fulfillment, tormenter and lover, and tonight she was being a combination of all the facets he had seen of her.

Together they floated to the place where she had the sun shine on a tiny stream that gleamed with golden fish bobbing in the shallow water. She dipped her fingers into the cool water and mischievously flipped it in his face. When he reached again for her, she was waiting. They made love there by the gurgling water, and later counted clouds shaped like droll faces.

"That one is yours," she said contentedly, pointing to one that was extra long and fleecy, "see how like you it is."

"More like a goat with a long beard." Peter grunted back. He asked, looking at her instead of the sky, "What's in your pretty white clouds? Rain, snow?"

SHE SHOOK her head emphatically, "Huh! Marshmallows, all of them. Long ones and fat ones and small ones, but all marshmallows. So we'll never have to be hungry. And sunshine to keep us warm and moonlight to make

us look pretty. No rain and no cold, ever."

She was different—hard and remote, suddenly—and he became frightened that it would be over again. He raised on one elbow and looked at her smooth face anxiously. She was staring intently at the sky. "I can make them be marshmallows, can't I?" She asked suddenly in a plaintive tone.

"If you want to. They are yours, you know." And she relaxed again.

"Do you know where we are?" Peter hadn't meant to ask again. It had precipitated an ending the last time he questioned her, but this time she merely smiled a secretive smile and waved off the question. "Okay, then. But how do you get me here? Back there I am getting into trouble over disappearing so often, and I'd like to know."

She frowned and turned her face from his gaze, looking instead toward the horizon. For an interminable time she appeared unable to answer, but then she said, "I close my eyes and think of Apollo, and you come; as simple as that." Her eyes were blue with the same gold of the brook sparkling in them, which she now hid with the incredibly long straight lashes that shadowed her cheek bones.

She murmured, "Would you rather I didn't?" She was mocking him, but beneath her sardonic tone was an undercurrent of fear.

For an answer he gathered her into his arms and held her close to him. She sighed and settled against his shoulder. "Dianne, if you can control this thing, please tell me how. Or how I can find you back there." Peter tightened his arm about her shoulder as she made an involuntary motion away from him. "Darling, listen a moment, please. What if something should happen to one of us? How could the other find out? We don't even know each other except here."

"I can't help it!" she cried. "Don't you think I want to be with you always? Don't you think I've tried? But it's no use; there's nothing I can do about it. When I remember you, I bring you to me. That's all!"

With a flash of temper she shook herself free of him. "Why don't you stay and wait for me? Every time I get here, I have to look for you, and you're never here!"

"**D**IANNNE, don't you know that I exist only because you will it? Don't you know that?" Peter pulled her back down gently and knew the answer before she

said it. She didn't know; this was her world, as far as she could remember. A dreamer isn't aware of the act of dreaming, only of the dream itself.

"I don't believe you. You talk of another place, but you can't show it to me. No one can make a place be unless it is. You exist; you come and go. You say you love me, and want to stay with, but you never do it."

She shook her head bewilderedly, and abruptly reached out and touched the water as if reassuring herself that it was there.

"This is real," she said, "I can feel it. This and the fish, and the clouds. I said that they aren't, but they are. They have rain in them, and in the winter, they have snow. See, I know that." She was very excited, and now caught up her long hair with one slender hand and held it up off her neck, and looked very young and very near tears as she fought the suggestion that it didn't exist.

Silently, Peter argued with her. It was there as long as she dreamed it, or as long as she willed it. When she tired, or drowsed, or became very angry with him—or just because—it ceased to exist as far as he was concerned.

He remembered one time when her complete attention

had been held by the song of an impossible bird. He had been gazing out over the distant hills when suddenly they had vanished and in their place had been an absolute nothingness. He had called out; and when she forgot the bird, the hills came back. With ease they moved from the pearly moonlight to the warm sunlight, or at times, didn't move, but let the very sky change before their eyes. There wasn't a single constellation up there that was familiar. And the stars were just that—five-pointed stars such as a child might imagine and draw. She was gay, beautiful, witty, keenly appreciative of beauty, but uneducated. She knew nothing of physics, of gravity, of astronomy. He wondered if her fish were only golden baubles without insides or means of procreation.

"**W**HY DIDN'T you always bring me to you?" He asked it idly, but was listening intently as always, searching for a little clue to help him find her back there.

"Because I didn't know you always," she answered simply and gravely as if she thought the reason apparent. "At first—for a long time—there were people here. Very nice people, but they were different

from you. They didn't do things unless I wanted them to; and if I didn't like them, they left. Then I began to think of people, and they came, but I always sent them back. Then I met you, and for so long I kept thinking of you, until finally you came." She was very serious then, looking at him with her long eyes seeking understanding.

For people he read men, and wondered what to make of it. Different ones at first. Probably like the fish, made up. Then she learned to bring real ones, but sent them back, and finally mastered the art and got him. And more important, kept him. He asked, "Were you trying for anyone in particular when you got me?"

"Naturally," she said indignantly, "You; I met you, and decided that you were the one."

And called yourself Dianne, he thought wryly. Didn't she know that this wasn't the real Peter Wainwright? His mind certainly, but not his body. Evidently she didn't. And what about the real Dianne, the same voice asked slyly. He sighed and gave it up for the time being. He had nearly forgotten the ridge; and he had promised himself that to-night would be the night, if ever.

While the thought was still strong in him, he gathered the slender girl into his arms and, with long purposeful strides, started across the valley toward the rim of hills that outlined it against an improbable sky of radiant blue. She rested her head against him and murmured that his heart was singing to her. She played with his hair and nibbled at his ear. And then she stiffened and moaned in an anguished tone; she had realized where he was heading.

HE WAS COMPELLED to put her down then. Against his will he found himself yielding to her unvoiced command, and she was swaying slightly beside him on the velvety grass. Hand in hand they retraced his steps, and casting yearning eyes back over their shoulders from time to time, returned to the brook.

"Why?" Peter suddenly shouted at her. "In God's name, why?"

"Leave me alone! Go away, do anything you want, but leave me alone! Go by yourself! You can, if you want to. I just can't!"

She hurled a stone savagely at the water, and it was gone, leaving in its place a drift of fluttering lily of the valleys. She stared at them

in fascination, then raised her eyes to him and the beginning of belief in them made them cloudy and somehow older.

Slowly she whispered, "I'm sorry, Peter. See, I can say your name now. Before, if I quit thinking of you as Apollo, you would be gone. Since that much has been accomplished, perhaps the rest will come also."

Her eyes returned to the green spikes of leaves standing so upright protecting the drooping white flowers. She knelt by them and touched them wonderingly. In a small voice she said, "These are just as real as the water was."

Wonderingly she looked past him toward the ridge, "I just don't know why. I want to go with you, but there is something that won't let me."

SHE SAT close to him, her head on his shoulder, her hand in his. A slight frown was rippling her smooth, creamy forehead. For the first time in years Peter found himself praying that with her awakening awareness would come the answer.

Abruptly, terrifyingly, he was in her mind and she was in his. He knew and lived experiences that had lay hidden for many years, and was aware that she was learning

him just as minutely. He remembered dingy rooms that were too cold, and nursed an elderly, grumbling man who seemed to be always grasping out and holding on, dragging him down, making him ashamed and contrite for petty annoyances. He felt the wild surge of life that the wind aroused, coming in off the ocean, and tasted the tears she had shed over seeing that life elude her grasp after all.

He felt pain such as he had never known existed grip him in numbing paralysis that left him gasping and longing for death. And he felt the nearness of that final end with a stoicism at first; and then, as the pain returned again and again, with eagerness. He saw himself through her eyes and knew love.

He released the love for her that had never found expression and was in turn blessed with the most delicious sense of being loved and needed and wanted. He searched for a way to solve their problem and realized that she was doing the same. Forlornly the thought came to him from outside himself that she was extremely tired and must rest now. Her thoughts gradually dimmed and then, finally were gone. For the next minute he re-

mained by her side as she slept.

III

HE WAS BACK in his living room, again leaning against the bookcase holding the brandy snifter. Gropingly he put the glass on the mantel, and reached for the nearest chair. He passed one hand over his face. His glasses were back; he felt his stooped shoulders resume their customary tiredness from his efforts to keep them straight when nature had seen fit to curve them. He was startled when he heard Daniels' voice in the semi-darkness of the room.

"I don't know where you've been, but you sure look beat." He sounded friendlier than he had before, and Peter was grateful.

Daniels was moving about and now he brought a cup of coffee and put it in Peter's unprotesting hand. "I think you need this."

Once more Peter felt the gratitude well up within him. He nodded numbly and sipped the hot coffee.

Daniels' face was sympathetic as he said slowly, "I don't know what's happening around here, but I think you need some help. You've been gone for three hours and fif-

teen minutes. There might have been a trick used to get you out of here, but I know none was used to get you back."

He chuckled slightly and motioned toward the door. There was a heavy chair against it, also the draperies were tightly closed and chairs pushed against them. The attorney smiled wryly, "I even had an architect in looking for hidden panels. You can take my word for it; there are none in this house."

He reached for his coat lying across the couch. Donning it slowly, he extracted a card from the pocket, "Here take this and come see me tomorrow after you've had some sleep. Maybe talking about it confidentially will help somewhat."

Peter took the card and looked thoughtfully at the lawyer, "Why are you so willing to help me all of a sudden? You were hired by my uncles and aunts."

"Only on a conditional basis. I dropped out the minute I convinced myself that you really had vanished. I think up until that point I assumed that a fraud was involved and it intrigued me. Now I'm even more curious, because I know for a fact that you do it unwittingly." He moved the chair from the door and opening it, paused once more,

"the roses helped to convince me, also."

Peter felt around his neck and found the rose garland was still intact. After the lawyer had gone, Peter locked himself in his room. He fell asleep instantly to dream the relatives were intent on burning Dianne at the stake for sorcery.

IT WAS TWO in the afternoon when Peter was shown into Daniels' office. He felt foolish and yet desperate enough to confide in anyone who would listen to him. After a few false starts, Daniels suggested that he simply talk about it, not try to explain or follow any chronological order.

"Well, actually I don't really know when it happened the first time. About six months ago, I guess. I've always had a dream that keeps recurring. It's about a place with a woods on one side of me, there is a stream and fish and it's warm. I don't know why, but the dream always made me happy somehow. I'd wake up feeling happy for having been there. You know?" He looked anxiously at Daniels who nodded.

"With me it's a ship. I don't know where I'm going, but the water is blue, and the weather is always pleasantly brisk. Just nice." Daniels

smiled slightly, "I go to sleep sometimes just hoping I'll dream of it again."

"That's it exactly. Well, in my dream there is a railroad track. Sometimes I walk along it for miles, but I can't cross it. And I know that if I could cross it to the other side that I'd be the happiest man alive." He grinned rather sheepishly and said, "I'm afraid that you are wasting valuable time listening to me."

Daniels had crossed the room and was staring out the window over the busy street. He pulled himself back with a start. "Hm? Oh, not at all. You just reminded me of something I hadn't thought about for a long time. In my dream, there's an island. I want to go there so bad sometimes that I could cry for it. But I can't. I can't steer the boat that way for some reason." He looked curiously at Peter, "Do you suppose that everyone has something like that?"

"I'm sure of it!" Peter waited for the drink that Daniels was mixing and then continued, "About six months ago my dream changed; at least I thought it had. Now there was a girl, and the scene had altered slightly. It wasn't a traintrack any more; it was the ridge of a hill. And so close. I think," he

said it cautiously, as if trying out the idea on someone, testing for reactions, "that it isn't my dream any more. I think that the girl—her name is Dianne—is dreaming it and that somehow she wills me into it with her."

"What!" Daniels was incredulous as the idea took hold. "Who is the girl? Do you know her?"

"No, that's just the point. If I knew her, I'd just assume that she was part of my dream. But, don't you see? She is doing the dreaming, and I leave whatever I'm doing at the time and join her there." He shrugged helplessly. "Who would call me sane after hearing something like that?"

DANIELS paced the room thoughtfully for several seconds. Then he asked, phrasing his question very carefully, hesitantly, "Eh, do you and the girl...that is...?"

"Naturally. She's dreaming, and you know how uninhibited you are in a dream. Only I'm awake, and have all my normal fears and anxieties. You know what I'm most afraid of—what if it carried over to her conscious, physical body?"

"Oh. You mean she is still home tucked in her little

bed, and only her mind is dreaming. She isn't there in the flesh the way you are?" Daniels threw up his hands suddenly, "I'm as crazy as you are. This is the most ridiculous conversation I've ever held."

"I know," admitted Peter apologetically. "See why I couldn't go to a doctor, or tell the folks, or do anything about it?"

Without waiting for the answer he continued, "I don't know how she does it, or whether she is real in the sense that I am. She seems real enough. But I do know that I'm different there. I am tall and strong, and my vision is perfect. Only the mind is the same."

He added ruefully, "She wouldn't recognize me on the street if she saw me."

"On the other hand," Daniels pointed out quickly, "perhaps you wouldn't know her, either. She might be someone's grandmother getting the fling she never got while she was young."

"But that's the whole thing; it doesn't matter! She could be different—I am; but there we are as near perfect as any people can be. And we don't change there—each time we're the same. Just the way you dream of being handsome and strong and all the good things, none

of the bad. I couldn't care less what she is like here."

DANIELS suddenly stopped his pacing and took his swivel chair behind the desk. He turned his back on Peter and said, "Look, you've been thinking about this for six months, and I've had it only a few minutes. You must have ideas that would at least try to justify it to yourself. Suppose you tell me about them and I promise that I won't interrupt until you are finished. Assume that I believe every word you are saying and keep going."

"Well, in the first place. I think the place really exists." Peter began slowly, expecting ridicule or disbelief as Daniels made no sound or movement to indicate he was listening.

Soon however, his voice began to sound more confident and he spoke quickly, relieved at finally telling someone about it. "I believe that everyone has caught glimpses of it through his subconscious mind at various times. It has boundaries—your island, my train tracks, Dianne's ridge; Lord knows what else. It's like approaching a house; you get to the porch and can get a small view of the interior, but there is something that won't

let you cross the threshold. The door is open, and you know that all you have to do is take the few steps through; but you can't. Yet if you could, you would never have to leave it again. And you want it more than anything else in the world. You know that it must be all that paradise represents to you." He paused for a long minute thinking.

"The funny part is that I feel sure that I could cross Dianne's ridge. But she can't, and I can't leave her behind. Last night something frightening happened. We communicated by telepathy. She is in some kind of danger and managed to open her mind to me, and at the same time get inside mine. She is trying desperately to find an answer, and I don't have it."

He hesitated for another moment, and in a groping manner went on. "I got the impression that she is ill, very ill. And if she dies, she'll go over the ridge—but that won't be the right way. It won't mean anything then. We have to do it before we die, for it to be significant; we have to be alive and knowing what we're doing. As though we are given the clues and have to do the rest ourselves to get the prize. If she dies, I won't go with her and I'll never see her again."

Peter rose from his chair and stood expectantly before the desk. "Well, are you going to make out those papers? I'll sign anything you suggest."

DANIELS' expression was compassionate as he answered, "Right now I have no suggestions of any sort to make. Let me think about it for a few days. I don't really think they'll go ahead with the proceedings against you; they fear publicity too much. And if all this does come to a sudden end, you'll need the company as you never have before."

He held out his hand, and as the men shook hands solemnly, he said, "It's the most unusual story I've ever heard. That doesn't really matter. If you do find an answer, I'd like to hear about it, if you don't mind."

"Of course. I'll be in touch with you." Peter paused at the door, and suddenly embarrassed, stammered slightly, "And thanks. For listening anyway. I...I...just thanks."

It was three days later when Daniels saw the item in the paper. Thoughtfully, and at the same time jeeringly, he clipped it out and put the scrap away in his wallet. That same evening Aunt Emily called him on the telephone.

"Mr. Daniels? Peter is gone. He left sometime last night and this time he hasn't come back. Do you know anything about it?"

"No, of course not, Mrs. Wainwright. Why should I?"

"Well, I know he came to see you, and he left a letter for you on his bureau. I've sent it to you in the mail, special delivery."

"I see. Well, he told me that he did leave at times, but not where he went. By the way, did he ever visit the Wainwright Memorial Hospital?"

"Naturally. Every Christmas one of us distributes gifts to the charity patients. Last year it was his turn. Why on earth do you want to know?"

"Uh, just curious. I'm sorry that I can't help you."

"Not at all. I feel sure that he is safe and well where ever he is."

"Yes, so do I. Goodnight."

AGAIN DANIELS read through the brief item from the paper. He was still staring at it when the messenger brought Peter's letter. It was short, written hurriedly in a scrawling hand.

Daniels, I've thought of a way to try. This is the third so far; the other two failed. I'm leaving a letter so that if it works, you will know how.

If not, I'll destroy it as I did before. Time is going fast now. I feel it every time I see her. She is able to keep us there for shorter times than a few weeks ago even. I'm afraid that her physical condition here must be deteriorating rapidly. Tonight I'm going to try to keep her awake. Each time as she sleeps she releases her hold on me and I find myself back here again. If I can keep her conscious there perhaps she can bring about the conjunction of the two persons into one, and remain there, as I seem to do. It's worth a try. At this point anything is.

Peter.

Daniels fastened together the two pieces of paper, the newspaper clipping on top. It consisted of only a few lines under the heading, "Dying Patient Disappears From Ward."

'Dianne Simmons, 30, last night disappeared from her bed in the charity ward of Wainwright Memorial Hospital where she had been a patient for the last seven months. She was given only a few days to live, as she is losing her fight against cancer. How she managed to leave her bed to depart from the hospital remains a mystery.'



The Reckoning



There was one dissent on "The Woman You Wanted", while nearly all the other votes put the story in first or second place. This could mean that a very small minority didn't like the tale, or that those who didn't like it neglected to vote. But I have to go on votes received, not estimates of non-voter opinion. A word to the wise — get those letters, postal cards, or coupons in! The returns this time show:

1. The Woman You Wanted	1.57
2. The Silver Cube	2.28
3. The Case For Earth	3.00
4. The Night the TV Went out	3.83
5. Problem in Ecology	4.00
6. The Zoet Space	5.71
7. Just Evie and Me	6.00

OBJECT LESSON

by Carl
Groener

This essay has been cleared for publication according to the provisions of file N, Section S, Division 7ee.

THE STRATEGY of the indirect approach lies behind the classic examples of military success, and the sad truth of the matter is that since so small a proportion of human warfare has been conducted according to its principles, almost every example can be cited as "classic". For the most part, men have tried to conquer their enemies in the simple-minded methods of head-on collision, counting on weight of numbers, equipment, and convictions of superiority and courage to win the day.

The lessons have been right in front of us so to speak, so long as recorded history has been available. And the reason why it is safe to draw attention to these lessons is that the odds still remain very large that hardly anyone will learn from them. While there is some danger that a potential enemy will gain vital instruction, this is more than offset by the possibility that our own military may learn something, too. Moreover, the possibilities of the "indirect approach" are virtually inexhaustible—and no

situation is ever duplicated so precisely that anyone could plan and execute a campaign directly out of the book.

IN THE Earth-Darco war of the last decade, we learned that the humanoid Darconians were human enough to have failings very much like our own. The "conquest" of Charrador—one of the key planets in the Centauri system—showed that the fundamentals of strategy need not be changed when contending with these non-humans.

"Conquest" has to be put in quotation marks, for this campaign neither intended nor achieved anything like what the term usually conveys. There was nothing to "conquer" on Charrador, the little world named after the commander of an early exploration. On both sides, the aims were to keep the other race out either by (a) setting up and maintaining installations which would destroy or repel any unwanted intruders (b) making Charrador unsafe or unfit for the opposition without destroying its value to oneself.

It will be remembered that

we were not at war with Darco; the struggle was unofficial, and diplomatic relationship had been neither broken nor greatly strained. The Darconians considered this a contest on the grounds of the disputed territory—a contest which had no effect upon their other dealings with Earth. It was to our advantage to accept these rules. Thus, Darconians visited or resided on Earth, and Earthmen made trips or took up residence on Darco, as before. It was tacitly understood that a certain amount of espionage went on—just as it was understood that, sooner or later, one side would be forced to evacuate, and acknowledge defeat.

This was the situation at the time the Recruiting Poster Scandal broke.

IT IS unfortunate that security requirements do not permit reproduction of the entire poster, but the section we have shown on the cover of this magazine will suffice. You will note that it shows an Earth-girl stepping out of one of the many large, pod-like pseudo-rock formations on

Charrador. The interior has been hollowed out, and fitted up in the manner of a listening post. Outside, space-suited beings bearing weapons, and other equipment, are making their way over the terrain.

The full poster emphasized the "glamor", "excitement", high pay, honor, advantages, and relative safety of Charrador service. Only women could fill these positions, it explained, since they are immune to the allergy which incapacitated Earthmen after a week's exposure. Danger, there was—but this was not essentially a shooting-fracas between personnel.

The posters appeared throughout Earth early in March. Within 24 hours, the outcry that went up from the military had resulted in orders to remove, impound, and destroy the entire printing. The government then started proceedings against the advertising firm of Klingsor and Moore, which held the civilian recruiting-poster contract. The outcry was no less vehement for the fact that it could only be expressed *sotto voce*. There were too many Darconian ears

to catch the point, if sight of the display had not been enough.

IT HAD; before the last poster had been removed, Darco was aware of the blunder. Earth's civilians might not know the fact, but it was apparent to anyone familiar with Charrador that we had enlisted the aid of natives, equipped them, and set them on patrols. The pseudo-rock outposts were the source of their instructions. The native Charradorians just intelligent enough to follow commands—but they had to be guided nearly every step of the way. The girls in the pods were their eyes, ears, and brains in effect.

A month later, the news broke: the Darconian fleet had come in force, and reduced every pseudo-rock-formation on the little planet that could possibly afford a command post for Earthlings. Klingsor and Moore found themselves incarcerated, facing investigation which might well culminate in a treason trial.

Another fortnight brought the news that the Darconians had landed in strength, unop-

posed. The native Charradorian units had dispersed, abandoning their equipment. The enemy had taken no measures against them. Klingsor and Moore were burned and hanged in effigy, and the guard around their prison quadrupled.

TWO MONTHS later, the last moaning Darconian had been evacuated from Charrador, and Darco acknowledged Earth's victory.

The public had since wondered since what the "secret weapon" might have been, how the trick was turned, how humiliating defeat transformed into triumph. Even now, security does not permit technical details, but a general summary of the situation is all that we need here to demonstrate application of the indirect approach. (The case against Klingsor and Moore was quietly dropped, and they have since been honored for invaluable service—unspecified.)

First, to correct a number of misimpressions. (1) At no time did Earth make use of the Charradorian natives. (2) At no time were women employed in any such capacity as depict-

ed in the poster. (3) The pseudo-rock formations depicted were never hollowed out, or made use of in any way. (4) Preventative measures against the allergy that attacked Earth males on Charrador were perfected six months before the poster scandal. (5) This, by now, should be obvious: the "natives in spacesuits" were Earthmen disguised as inhabitants of Charrador.

There is in the atmosphere of Charrador, a certain quantity of a gaseous element, harmless to Earthmen, but deadly to Darconians. However, nearly all of it was absorbed by the pseudo-rock—we cannot divulge the exact nature of these formations, but can state that such compounds do not exist on Darco. We had determined that, if most of the pseudo-rock above the surface could be destroyed, Charrador would become uninhabitable to the opposition. Such a task, however, would require enormous amounts of energy.

The object of the Recruiting Poster Scandal was to induce the Darconians to do the job for us.



TEXAS IN THE SKY

by Richard Embs

It would be the last space flight, unless current theories were sound, and there was oil on Venus...

I DON'T CARE *how* it looked; it was justifiable assault, believe me! Oh, I'll admit it was pretty crude, happening that way in front of fifty million television viewers, but I had my reasons. And the fact that he

was my brother doesn't cut any ice either.

Everybody will probably call me a clod, and maybe that's what I am. Still, if you would really like to know what's going on, I might as well give you the whole story.

Maybe afterwards you'll be able to see what I mean.

It began about a year ago, before the formation of the Texas-in-the-Sky Oil Company.

As you know, civilization was pretty much on the skids then. The Great Oil Shortage—which had started around 1970—had grown acute at the turn of the century, and all petroleum products were on a permanent ration. The old days of luxury automobiles and mechanized warfare were gone for good. Production was nosediving, and things were tough for everyone.

Things were especially tough on the Sunrise Oil Company. Like most oil companies at the time, it was barely handling enough gasoline to run its own trucks. Its employees were drawing starvation wages. The company executives were desperate, and after much contemplation, they came up with an idea so fantastic and daring that they themselves were overawed by it.

THIS IS where Ron—my brother—and I come into the picture. We had just been laid off from the Space Service, where we had worked as rocket pilots; space travel was dying, like everything else. It was pretty depressing, and we tried to fill in the

empty hours with our hobby, gardening. In those days, nearly everyone grew his own food.

We were deep in the tomato patch one morning, when the 'phone rang inside the house. Ron dashed in to answer it while I remained in the garden, wondering who would spare all the expense to call us up. He came out a few minutes later, looking deeply thoughtful.

"What's the matter?" I asked. "Somebody die?"

He stood there awhile, with his hands in his pockets and his eyes on a distant cloud. Finally he said, "It was a Walter Bronson, from Sunrise Oil. He wants to offer us a job."

"He does, eh?" I said, returning to my work. "Hell with them. They don't pay enough to keep a canary alive."

"But he said it would pay very good," Ron went on. "Besides, he wants to hire us as space pilots."

"Space pilots!" I exclaimed, sitting upright. "Are you sure that's what he said? What would an oil company want with a space pilot?"

"Search me. But he said that if we want the job, we'd better get down there on the double."

I scratched my head. "Well,

there's only one way to find out."

RON HAD the address of Mr. Bronson's office, which was located about ten blocks from us. After a quick change of clothes, we were on our way.

Sunrise Oil kept its city offices on the seventh floor of a downtown office building. We had to take the stairs, since the elevators were shut down during that time of day. I was breathing hard when we appeared before Mr. Bronson's bright young secretary.

"Duncan and Ronald Hill? Go right in," she said sweetly. "Mr. Bronson is expecting you."

Ron made eyes at her until I pulled him into the inner office. That guy will never grow up.

"Hello, Duncan; hello, Ronald," Mr. Bronson greeted, coming forward to shake our hands. He was a neat, balding man with a strongly intellectual appearance, and his inner office was attractive and modest. In fact, it was modest almost to the point of drabness.

"Have a seat, boys," he said amiably. "I suppose you're both wondering what this is all about."

We dropped gratefully into the proffered chairs and told

him simultaneously that we were.

"It's simply this," he said, leaning against his desk and looking at us seriously. "We need a pair of experienced space hands like yourselves for a three month engagement. You'll be put on the payroll as of now. The pay is extremely good and the risk comparatively small." He paused. "Well what do you say?"

"Well, uh, sir," I stammered. "This is a little overwhelming. Could you give us a few more details, uh.."

"Yeah," Ron put in. "What do you need space pilots for? How do we know this whole thing isn't a big gyp?"

I glanced sharply at Ron.

MR. BRONSON looked embarrassed. "Well, I suppose you boys are entitled to an explanation. However, the whole project is top secret, and I can't tell you much more than I already have. But I give you my word: everything is perfectly legal." He looked directly at Ron. "It would be hard to find grounds for doubting the integrity of our concern."

"What my brother means," I said, flustered, "is that we wouldn't want to sign our lives away, or something like that."

"I mentioned the fact that

there would be little risk." He walked around the desk and pulled open a drawer. "I have your contracts here, which I want you to sign. You can release yourselves from them any time during the first week, so there's nothing to fear."

He handed us each a contract. We settled back and began to study them.

"It looks all right..." Ron said cautiously.

It did look all right. Sunrise Oil was to hire us in our capacity as space pilots for a six week space flight to the planet...

"Venus!" I exclaimed.

Mr. Bronson was silent. Ron said excitedly, "B-but... why Venus? If you're going to look for oil on other worlds, go to Mars. At least we've *been* there. Nobody's ever gone to Venus."

"We have our reasons," Mr. Bronson said. "And if you want to find out what they are, please sign."

WE HAGGLED like that for several minutes, but in the end, we signed up. I was dying of curiosity; it didn't seem logical that a company would risk everything to send a spaceship to a completely unexplored planet. One space flight could ruin Sunrise Oil.

After looking over our sig-

natures, he carefully locked the papers in his desk. Then he settled back in his chair and grinned easily at us.

"Any questions, boys? Remember, the contract forbids you to divulge any information you pick up here."

"Do you expect to find oil on Venus?" I asked quickly.

"We hope to, yes."

"But that's a big chance to take," Ron said.

"Not *too* big a chance, Ronald. To prove my point, I'll give you a quick lesson in astronomy." He sat forward and spread his hands on his desk. "Consider these facts about Venus." He counted them off on his fingers. "Proximity to the sun, atmosphere of carbon dioxide, complete absence of oxygen and water, and a long period of rotation—about a month."

I ran them through my mind and nodded. "Okay. Go on."

"Well, the lack of water is easy to explain. The sun's ultraviolet radiation, stronger there than here, would break it down to form hydrogen and oxygen. The hydrogen would leak off into space."

Ron looked puzzled. "But you said there wasn't any oxygen on Venus."

"There isn't, and that's the main point. The oxygen was absorbed by an agent on the planet's surface."

"Oil?" Ron ventured.

"Correct!" Mr. Bronson exclaimed, his face reddening with excitement. "The oxygen was 'burned' by the oil, thus resulting in an atmosphere of carbon dioxide. Good thinking, Ronald."

THAT'S QUITE a compliment, since thinking isn't one of Ron's strong points.

I said, "So there's oil on Venus, theoretically. But maybe most of it was consumed, and the rest spread too thin for practical use. How do you know it's worth going after?"

"You have hit on the most exciting part of the theory, Duncan," Mr. Bronson replied thoughtfully. "But I said that Venus had an exceptionally long period of rotation. What factor can lengthen a planetary day, Duncan?"

"Uh...tidal friction, I guess."

"That's right. But tides need oceans. And there isn't any water on Venus..."

There was a pregnant silence. Then the idea dawned on me.

"Oceans of oil!" I burst out. "Is that what you mean? I *can't* believe it!"

"I *don't* believe it," Ron said firmly.

"I'll admit it's a long shot," said Mr. Bronson wistfully. "But, as you know, our com-

pany is facing extinction. More and more oil wells are drying up every day. So we've decided to grasp at this last straw, to go down fighting."

He looked at us seriously and added, "I'll be very blunt about this. The fate of the Sunrise Oil Company, and perhaps that of our entire civilization, depends upon the success of this mission."

THERE WAS silence. A chilly tenseness spread through my body as I realized the tremendous possibilities of the whole project. My mind whirled in awe.

"Well? Are you still with us?" he asked quietly.

"I'll stay with you," Ron replied.

"Same here," I said. "Actually, it sounds like a simple job. Spaceships aren't hard to pilot."

"Not *quite* that simple," Mr. Bronson said. "The regular spaceship pilots have been hired beforehand. You boys will handle the atmosphere landing rocket; you'll take it down to the very surface of Venus."

"We will?" Ron and I exclaimed.

Mr. Bronson chuckled. "Don't worry about it, boys; it's not as bad as it sounds. You've got a week to think it over." He glanced at his watch. "Well! Almost lunch

time. Report to the Space Service tomorrow at nine, boys, and you'll receive your instructions."

"Okay by me," I said, getting to my feet. "Come on, Ron. We've got a long walk home."

Still smiling, Mr. Bronson went to the door and called to his secretary.

"Jacqueline," he said, "phone the garage. We're going to *drive* these gentlemen home!"

And that's how it all began.

I WAS NEVER the same since I left that office. The whole project, and all that it meant, fascinated me, and for days afterward I could think of little else. If the theory were true, then Venus would represent a second chance for mankind, literally a blessing from heaven.

Ron wasn't the least bit affected. He didn't believe in the theory at all, and still maintained that Venus was just a big rock covered with dust clouds.

During the first week before the flight, we had to go through a series of refresher courses in spaceship maneuvering, which were no challenge at all. Hell, if you can steer a cow, you can maneuver a spaceship. Still, I had a lot of fun, and it felt good to be back on the job again.

The first week flew by. Neither Ron nor I backed out of the contract, since I was too much interested in the whole thing, and Ron was too much of a glory hound. Then, on the eighth day, we were shuttled to the last operating space station of the Service.

At first, of course, all we did was lie in our bunks and moan through an attack of space sickness. Even the most experienced space hands get sick like that; it's a sort of withdrawal illness from the pull of the Earth's gravity. Fortunately, the weak, centrifugal "gravity" of the station held down my stomach most of the time.

In a few hours, we were able to report to the Expedition Commander when he called us.

COMMANDER HERMANN looked the very picture of a retired college athlete, in his turtlenecked sweater and gray-streaked crewcut. When we entered the room, he greeted us with a vigor that was uncommon even in the station's low gravity.

"Feeling better, boys?" he said briskly. "Sit down. There's something we have to straighten out."

Why does everyone call us "boys"?

I took the only chair in the

room and Ron sat on Hermann's little pull-down bed. The Commander paced back and forth until we were situated.

"Have either of you seen the landing rocket you're going to use?"

"No, sir," we muttered together.

"I don't know if Wally told you this," he said, frowning, "but that rocket is brand new and unique. It was built especially for the rough conditions on Venus."

"Mr. Bronson didn't mention that..." I began.

"And you boys," he interrupted, "will need all the stamina you've got, because we're going to train you to pilot that rocket. Before this trip is over, you'll have every nut and bolt on that thing memorized. Any questions?"

Ron paled slightly. The prospect of work was always hard on him. He asked, "But we've never been told about this. Suppose we don't want to go?"

"There's an airlock around the corner. Nobody'll stop you from walking home."

I had to smile. Hermann was trying to act tough, but I could see that he was probably a regular guy, like me.

"You two are the youngest qualified men in the Service," he went on; "that's why we hired you. Now if you're still

with us, report to airlock nine. The *Sunrise Special* leaves in an hour."

"Yes, sir," we said together.

IN TEN minutes we had packed up our stuff and were waiting inside airlock nine, in our vac-suits. This gave me time to examine the ship, as it hung apparently motionless in space before us.

The *Sunrise Special* was old, but in very good repair. It was about two hundred yards long, and the four huge, cylindrical fuel tanks flanking it gave it the look of a wingless fly. The crew's cabin was a big metal sphere on its nose. Although it must have been built way before 1985, it was one of the newest spaceships available, thanks to the Great Oil Shortage.

The thing attached to its belly held most of my attention. It was shaped like a streamlined beer bottle, about one-fifth as long as the mother ship, and punctured all over with rocket tubes. That was the atmosphere rocket; and, as Hermann said, it was unique. I had never seen anything like it before.

That rocket was going to carry Ron and me down to the surface of Venus. The very thought of it made me shudder.

A few minutes later we

were picked up by a little jet-taxi and towed across space to the ship. The departure from the station suddenly gave me vertigo, and I began to get sick again. I managed to keep from barfing, though, until we reached the ship.

The trip began exactly forty-five minutes later.

It was a nice takeoff. The *Special* accelerated for one hour at .57 gravity and then maintained a predetermined elliptical course to Venus. Things were pretty much routine in general, and I won't go through all the details of the trip.

But I must say that Hermann was true to his word. Instruction in the use of the new atmosphere craft began immediately, and I don't think I worked so hard in all my life. Hermann's hatchet men were on my tail every minute of the way.

Ron was made the actual pilot, and I was the navigator—a much harder job. In the six week trip I had to learn to operate the craft's radar, sonar, trajectory computer, and a dozen other instruments needed to land the *Cupid*—our nickname for the rocket—on the roughest planet in the solar system. All Ron had to do was steer.

I nearly killed myself learning all that stuff, but it

was worth it. I finished my job in over two hours before Ron did.

By that time we had reached Venus.

I WAS SACKED out when we arrived. A few hours before, some of Hermann's hatchet men had run me through a long final test on instrument control, and it so exhausted me that I had barely made it to bed. My sleep was filled with weird dreams. Once it seemed that I was piloting the *Cupid* with Hermann saddled on my back and ordering me to land on the peak of the Washington Monument in a hurricane...

A dazzling white flash jolted me awake. The wall viewport blazed like the sun, and the whole room was filled with an intense pearly light. I realized that we had reached Venus at last. Excitement welled up in me as I undid my bed straps and propelled myself across the room.

The morning star was shining like a magnesium flare. I dimmed the 'port until the light was tolerable and then gazed out at the white planet.

I couldn't see the surface, of course. Venus is perpetually draped with a thick, deep smog (Oil condensate? I wondered) which had, until then, concealed her secrets

from mankind. It was up to Ron and me to descend through that blanket and see what she's been hiding.

I floated there awhile, nearly hypnotized by the pure whiteness of the planet, until a sharp buzzing from the intercom grabbed my attention. Reluctantly, I pushed myself away from the 'port and drifted over to the noisy little instrument.

It was one of Hermann's hatchet men with the glad tidings that the Commander wanted me immediately. I sighed, shut off the 'com, and began to get dressed.

Hermann was tearing his hair when I floated into his room. The last few hours must have been pretty hectic for him, and he was ready to blow his top. Ron was beside him, looking as tired as I felt.

"Where in hell were you?" he shouted. "I had to root your little brother out of his cocoon, but I didn't think you'd be napping, too. They don't make spacemen like they used to."

"That final test was tiring, sir," I said. "We're ready now, anyway."

"Okay, then. Both of you report to the *Cupid* at once; you're being dropped as soon as possible. At least that'll be off my mind." He began to simmer down. "By the way,

the spectro men found positive evidence of carbonaceous material down there. But don't get your hopes up; for all we know, it could be oleomargarine."

"Yes, sir," Ron and I said together. As we turned to leave, Hermann switched on an intercom and began barking orders to prepare the *Cupid* for launching.

THE TIME had come. My stomach was tying itself in knots, five minutes later, when we reported to the *Cupid*.

There was a narrow, connecting tunnel between the airlock of the *Sunrise Special* and that of the *Cupid*, so we didn't need our vac-suits. I donned my coveralls, crawled through the tunnel into the *Cupid's* control cabin, and sat down in the navigator's seat. A few minutes later, Ron came slithering through.

The control panel was a wide field of buttons, studs, and dials all neatly spread out for inspection. I began a routine check; fuel, radar, computer, power flow regulator...everything was perfect. We were all set.

Ron took his seat next to mine and hurriedly began manipulating the controls on his side of the panel. The airlock behind us hissed itself shut and the connecting tun-

nel withdrew. A ventilator fan hummed.

"Scared?" I asked.

"Who, me? No." Ron stared at the panel, his face stoney and tense. "We've handled atmosphere landing rockets before, haven't we?"

"Oh, yes. Definitely. Definitely."

Just then, the automatic radio in the ceiling grumbled into life. "*Special to Cupid.* How do the instruments check, Mr. Hill?"

"Everything's fine," Ron and I said almost in unison.

Hermann's voice cut in. "We're going to release you now, boys. Remember—go straight down, get a dirt sample, and come straight back up, with no screwing around. Got me?"

"Got'cha," I said.

"Okay. Good-bye...and good luck!"

HIS VOICE went out. The *Cupid* lurched abruptly, and I realized tensely that the *Special* had disengaged us. We were on our own.

"Slam on the brakes," I said. "We've got to neutralize the orbital velocity."

Ron obeyed. The forward jets roared briefly, and the shock of deceleration pushed me practically out of my seat. If it weren't for a few well-designed straps, I would

have been squashed like a bug on the panel.

The *Cupid* began to fall, tail first. The descent through the ionosphere was easy, and all we did was watch the controls for our position and velocity. Then, under my direction, the trajectory computer figured out a parabolic course for us to follow on our way down.

At the altitude of two hundred miles above the surface of Venus, the fun began.

"The hull's getting red hot," I said. "We'd better slow down."

Ron fired the rear jets twice, and we felt gravity for the first time in six weeks. I didn't particularly like the feeling.

At one hundred miles up, we had to turn on the rear jets permanently.

At ten miles, the air got thicker and wilder, and we had our hands full.

The *Cupid* bucked and lurched like a crazed bronco, and all the gyrostabilizers overworked themselves. Ron fired the jets in all directions to keep us from turning over. I abandoned the parabolic course and let the *Cupid* fall through a dizzy spiral.

"Is there a hurricane out there?" Ron asked frantically.

"At least a dozen," I replied. "Brace yourself!"

We hit a vicious downdraft and fell six thousand feet in four seconds. I swallowed my stomach and looked anxiously at the radar. The land below was flat and smooth, and we were plunging toward it with a tremendous speed.

"Slow down!" I yelled. "Quick!"

Ron acted fast. The *Cupid* shuddered fiercely as we came to a roaring stop just yards above the ground. Then Ron diminished the power and the tail gently touched dirt.

WE HAD landed safely. Relief surged through me as I heard the *thunk-thunk* of the landing hooks anchoring us to the ground.

I was exhilarated, in spite of the sluggishness in me caused by the gravity. Ron and I were now pioneers on a virgin world; we had pushed the boundaries of mankind a little further back. And if Mr. Bronson's theory were true, we'd probably be immortalized by history.

A quick check of the controls showed that the *Cupid* had suffered no damage on the way down. What a marvelous ship!

"We made it, Ron!" I exclaimed breathlessly. "All our troubles are over!"

So I thought.

Ron sighed wearily. "Okay,

we're here. Now you'd better go outside and get a sample of dirt, so we can go back up."

"Huh? Since when do you give the orders around here?"

"Look, idiot," he snapped. "I can't go out there because I'm the pilot. I'm essential. You have to go since you're my assistant. Use your brains, eh!"

"Your assistant!" I roared. "Who do you think you are, you..."

That started a hot argument which lasted a long time, since Ron was too childishly stubborn to listen to reason. That guy has a streak of egotism and selfishness in him which comes out every so often. He'll never grow up.

Finally I stopped the dispute and said that I would go outside, so that his pigheadedness wouldn't ruin the whole trip.

"And while I'm getting the thermal suit," I added, grumbling, "make yourself useful. Analyze the atmospheric conditions out there."

Ron turned sullenly to the analysis controls while I unpacked the thermal suit. After checking its canned oxygen and its thermostats, I pulled it on and zipped it up to my chin. It was a brand new suit, and its asbestos and plastic lining crackled stiffly when I moved.

"What's it like out there?" I asked, donning my gloves.

"Not bad," Ron mumbled. "Pressure about the same as Earth's. Atmosphere mostly carbon dioxide with no methane, oxygen, or water vapor. Temperature: one hundred and seven."

"One oh seven? Is that all?" I scratched my head. "I thought it'd be a lot hotter than that, being so close to the sun. Oh, well." Just before I put on the helmet, I added, "Open the door, *pilot*. Your *assistant* is going out."

Then, without looking back, I clamped on the head-piece and stepped into the airlock.

THE INNER door of the 'lock hissed shut behind me. As I stood there waiting for the outer door to open, I wondered about the temperature reading Ron had given. One hundred and seven degrees was cold for a planet like Venus; maybe the perpetual cloud covering acted as an insulator.

The outer door opened. I stepped out onto a little metal ledge built around the base of the airlock.

Well, believe you me, it was hotter than the Devil's throne out there! I leaped back into the comparative coolness of the airlock and turned the temperature in my suit way, way down. At

the same time, I wondered how a dolt like Ron, who couldn't even read a thermometer right, ever got into the Space Service. (I found out later that he had given me a *centigrade* reading.)

Shaking slightly, I again stepped out on the ledge. The ground was thirty yards straight down, and the wind was so strong that it nearly knocked me off my feet. Fortunately, the *Cupid* shielded me from much of its blast.

A ladder ran from the ledge to the ground. Just before I started to climb down, I tried to get a look at the surrounding terrain (or was it "Venusian"?), but a thick, opaque fog covered everything. However, I could hear a queer, booming noise which sounded like distant thunder.

Curious, I started to climb down the ladder. Its rungs were covered with a slick, greasy film, and I had to descent slowly and gingerly. As soon as my feet hit the ground, I reached down and scooped up a handful of dirt.

As I squeezed it, a dark, syrupy fluid dribbled between my gloved fingers. It was oil! I was sure of it! I was holding the very life blood of civilization in my hand!

MY ENTHUSIASM dimmed as I listened again to that odd booming. It

seemed to be louder and closer now, and I could hear strange, rushing overtones in its thunderous noise. The ground vibrated constantly. I got worried about it, and would have investigated, if it weren't for the fog.

As I was thinking about that, the fog thinned momentarily. And I saw the *thing*.

It stood about a hundred yards away, a black, quivering tower that grew higher and higher. As I watched in awe, it swelled into a gigantic, ugly mushroom and then vanished suddenly into the fog. One second later, a loud boom shook the ground.

A monster? It can't be, I told myself as I stood petrified with amazement. Nothing could live in an incom-bustible atmosphere with a temperature higher than the boiling point of water. I had only seen it a few seconds; it could have been a trick of the fog.

Nevertheless, fear trickled down my spine like ice water. When I was a kid, I used to read stories about Venus being covered with oceans filled with monster fish, or having tangled, steamy, swampy jungles full of man-eating plants. Maybe that formed the basis of my present fears.

The rushing, booming noise got even louder. Then the *thing* returned.

It was a huge, black wall moving through the mist straight toward me. It must have been over fifty feet tall, and its top frothed and seethed wildly. I paused an instant to let my hair stand on end, and then scrambled up that ladder as fast as my legs could carry me.

There was a soul shaking *ker-splooosh!* and a big gob of crude oil slammed against the ship. The *Cupid* teetered under the impact. I got the breath knocked out of me, but that was all, fortunately. After the worst of it was over, I looked back and watched the thing recede. I knew what it was now.

It was a tidal wave. We must have landed right next to an ocean, and the sun's gravitational pull was making the liquid pelt the shore with huge waves. Waves of oil!

The *Cupid* was drenched with the stuff. But I climbed upward lightheartedly until I heard another sound which made me freeze in horror. It was a sharp, sputtering noise which could only be...

The rockets! Ron was taking off!

"Hey! Wait for me!" I screamed, dashing up the slippery ladder.

THE AIRLOCK was completely filled with a gummy, oily sludge. I dug into

it frantically, and it absorbed me like quicksand. But once inside, I was helpless. I couldn't get enough traction to dig any farther.

Then my body turned to lead, and I sank to my knees. That was acceleration pressure, I told myself miserably. We were leaving Venus at a fast clip. I hollered my head off to Ron, but he didn't let me in.

I was doomed. My thermal suit would never protect me from outer space.

Somewhere along the line, I passed out. Just before I went, I could hear the hissing and popping of the sludge around me as it was boiled by heat from the air friction...

MMUCH TO my surprise, I eventually regained consciousness. Commander Hermann's bland face was the first thing my eyes focused on.

"How do you feel, Hill?" he asked quietly.

I gazed stupidly at him and then at the rest of the room. We were in the *Special's* infirmary, and a couple of straps held me loosely to a hospital bed. The ship's medic sat by my side.

"You just had a bad shaking up, Duncan," the doctor said reassuringly. "We'll

have you up and around by supper time."

"What happened?" I mumbled.

Hermann explained everything. While Ron was taking the *Cupid* up, the air friction boiled the sludge I was in. The lighter liquids were distilled off, leaving behind a solid residue.

"So we found you snug and safe from the rigors of outer space, all sealed up in a wad of asphalt," he said laughing. It was the first time I had ever seen him crack a smile.

"You'll have to take it easy now," the doctor said. "If there's anything you'll need..."

"There is," I said angrily. "Just let me get my hands around Ron's neck."

"No, don't blame him!" Hermann told me forcefully. "He *had* to take off without you! He thought the *Cupid* was in danger."

"He insulted me once and nearly killed me twice! How much can a man take?"

"We'll talk about that later." Hermann stood up to go. "By the way, there'll be a party tonight for the whole crew. And you and your brother are going to be on a special TV interview show we got set up. It's going to be beamed back to earth."

"No kidding?" That cooled me off. I love parties, and the

prospect of an interview show delighted me to no end. I'm just a show-off at heart.

"You're coming to the party, then?"

"You bet!"

"Okay. See you there." He gave me a friendly tap on the shoulder and floated out of the room.

WELL, ALL the rest is history. Sunrise Oil became the Texas-in-the-Sky Oil Company, and it immediately began construction of a big fleet of space oil-tankers. Ron and I were each given command of one of the new ships.

The Great Oil Shortage is over, and all civilization rejoices in that fact. Now, once again, we can have luxury automobiles, space flight, and mechanized warfare.

Now here's the point of this whole story.

I had to do that interview show with Ron, and it took most of my will power to

keep from throttling him on the spot. But I managed to sit by him and smile at the home-made TV cameras (made for the occasion by the electronics men on board).

"As you know," the interviewer said, "Duncan narrowly escaped death when he was trapped in the airlock of the landing rocket. Dunc, have you anything to say to our audience about that awful experience?"

"Uh...I sure was scared," I began. Then a wonderful pun leaped into my mind. It was the type of witty saying that would make the whole world laugh, and would make my name a household word.

I went on happily. "It was the first time..."

"It was the first time he'd ever been boiled in oil!" Ron burst out.

I wish I could have done more than just blacken his eyes.



Some people never learn! Here's the true story of a man who studied murder cases, and decided he knew how to avoid error, and perpetrate a perfect crime. Read

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★ **DOUBLE ACTION** ★
DETECTIVE and MYSTERY Stories

Readin' and Writin'

Book Reviews by JAY TYLER

THE BURROUGHS BULLETIN, Number 12; Vernell Coriell; Box 652, Pekin, Ill.; 47 pp including photos; free on request.

Vernell Coriell is a rare example of a sort of enthusiast we can generally do without—rare, because if all were like him, we wouldn't find this type of fan objectionable at all! I refer to the person who makes a hobby of the works and life of one author.

I might add that, in general, the Sherlock Holmes fans—the Baker Street Irregulars and their counterparts—are also exceptions. They don't obtrude upon people who aren't

interested in Holmes, or who do not consider Sherlockiana worth taking seriously—and they take it seriously in humorous way. They do *not* act and talk as if Conan Doyle were the greatest author who ever lived; as if the “sacred writings” were the greatest literature ever written. They “assume” for the sake of the fun that Holmes and Watson were real people, rather than the creations of Doyle's fertile imagination, and explicate, speculate, and co-ordinate the stories. It's lively fun, and the more intellect you bring to it, the more fun it becomes. It would stop being fun and become dreary were the Irregu-

lars, etc., to become convinced of their own humorous assumption and maintain in earnest that it's all really true!

Similarly, Verne Coriell does not try to persuade the world that Edgar Rice Burroughs was an author of "great literature". He thinks the stories are "great" in the way one says happily, after a thoroughly enjoyable reading experience, etc., "that was great!". And he enriches this enjoyment with explorations into the material and the author.

HIS FAULTS lie in discrimination, at times. Some of the material he runs in these bulletins (if the others are of a piece with issue number 12) are by people who lack both his own sense of balance about Burroughs and the ability to write without dreadful gush...as well as the ability to write, period. No matter; I found enough interesting material in the issue to make it worth my while, and skimmed the rest.

Particularly interesting (and valuable for those who want to collect all or certain sections of Burroughs material) is the bibliography. I skipped or skimmed some of the appreciations, but other Burroughs fans will want to read them.

All in all, since we can't expect perfection, my one bit of advice to Mr. Coriell would be: *don't give it away!* The fact that it's free will make many think it isn't even worth asking for. You want wide circulation; you're not interested in making a profit, or even clearing expenses—very well; then charge a dime per copy. That isn't beyond the means of your intended audience, and they'll be even more impressed with how much they got for their money. Meanwhile, so long as Verne is insisting on giving it away, let me urge all Burroughs lovers to applaud this effort by sending for a copy.

You can't lose!



SCIENCE FICTION ALMANAC



The dates listed are those that appeared on the magazines, rather than the dates when they appeared on the newsstands.

JULY

- 1926: (marginal) *Ghost Stories*, Vol. 1, No. 1; large size, roto paper; monthly; (editor uncertain — possibly Robert Napier).
- 1929: *Air Wonder Stories*, Vol. 1, No. 1; large size; monthly; Hugo Gernsback, editor.
- 1940: *Science Fiction Quarterly No. 1* (no volume indication) pulp size; Charles D. Hornig, editor.
(marginal) *Fantastic Novels*, Vol. 1, No. 1; pulp size; bi-monthly; Mary Gnaedinger, editor.
- 1941: Final issue of *Comet*, Vol. 1, No. 5.
Final issue of *Cosmic Science Fiction* (Albing) Vol. 1, No. 3.
- 1943: Final issue of *Science Fiction Stories* (pulp) Vol. 3, No. 5.

- 1947: *Fantasy Book*, Vol. 1, No. 1; large size (saddle-stitched); no frequency stated; Garret Ford, editor.
- 1950: *Out Of This World Adventures*, Vol. 1, No. 1; pulp size; bi-monthly (so listed, though only one more issue appeared 5 months later); Donald A. Wollheim, editor.
- 1953: *Beyond*, Vol. 1, No. 1; digest size; bi-monthly; Horace Gold, editor.
- 1955: Final issue of *Planet Stories*, Vol. 6, No. 11.

AUGUST

- 1928: (marginal) *Ghost Stories* now pulp size, pulp paper.
- 1936: *Wonder Stories* (revived by Standard Publications) now becomes *Thrilling Wonder Stories*; pulp size; bi-monthly; Mort Weisenger, editor.
- 1938: *Marvel Science Stories*, Vol. 1, No. 1; pulp size; bi-monthly (so listed, though but one issue appeared thus in this period); Robert O. Erisman, editor.
- 1951: Final issue of *Super Science Stories* (Popular Publications), Vol. 8, No. 3.
- 1953: *Science Fiction Stories*, No. 1; digest size; no frequency stated; Robert W. Lowndes, editor.
Orbit Science Fiction, Vol. 1, No. 1 (no dates listed); digest size; quarterly; Jules Saltman, editor.
- 1957: Final issue of *Space Science Fiction*, Vol. 1, No. 2.
 Final issue of *Tales of the Frightened*, Vol. 1, No. 2.

Are You Being Represented?

How does "The Reckoning" this time square with your ratings of the stories in our April issue? Is your opinion represented? If not, there's one remedy — you can insure representation on this issue by voting!



DOWN TO EARTH

RAY CUMMINGS BOB OLSEN
ORLIN TREMAINE HENRY
KUTTNER LORD DUNSANY

DEAR READER:

I think that most of you will find the names listed above familiar; of course, they are well known to oldtimers in the field of fantasy and science fiction. I want to tell you something about each of them, as they have all left us within the last year or so.

When I first started reading science fiction regularly, just after Christmas 1929, one of the authors often referred to in "The Reader Speaks" (*Science*

Wonder Stories) was Ray Cummings. "Get some new stories by Ray Cummings—or reprint some of his famous novels and novelets" was the appeal of many readers.

It was then a little over ten years since "The Girl in the Golden Atom" had appeared in *All-Story Magazine*. (March 15, 1919). We know now about the pseudo-science in this, and other such tales; we know about the post-Victorian style and rather simple-minded plots

—but what we forget is what was most important to the development of science fiction: the impact these tales, written with love and true wonderfulness, had upon pulp-magazine readers in the decade before Hugo Gernsback produced *Amazing Stories*.

For in these stories, Ray Cummings wrote from the heart—not the guts; and the reverence he felt at contemplating the universe and the “wonders” of the future (some of them now commonplace), communicated itself to unnumbered thousands of potential science-fiction fans. His stories were more along the lines of what we might call “speculative fiction” than science fiction, according to the definitions we are making today. Cummings had had a grounding in science and scientific work (he’d been an assistant to Thomas A. Edison at one time), and there is a firm undercurrent of respect for science in his wildest flights of fancy.

I DO NOT think that, for the most part, he was trying to

extrapolate; rather, he was asking himself, “What if?” I suspect that had he read Dr. Macklin’s dissection of the fallacies in “Girl in the Golden Atom”,* he’d have grinned and acknowledged the errors, stating that he was well aware of them—but that accuracy in these respects wasn’t his purpose at all. He was trying to picture what you would see and hear and feel if you *could* shrink or expand to any size you wanted to, *without* encountering any of the dire results we all know you actually would meet.

The plots and characters which seem so passe today (as indeed they are) did not appear that way to pulp-magazine readers of the early twenties. And, for all this, some of the early tales still have charm; Cummings had the much-discussed “sense of wonder”, and he communicated it. I can still enjoy some of the stories today, so long as I think of them as fantastic adventures. Cummings has earned science fictionists’ remembrance for the

*See “The Two-Way Stretch”, *Science Fiction Quarterly*, November, 1956.

part he played in preparing the ground for Hugo Gernsback's success later.

Today science fiction needs higher standards of writing, of character development, and scientific plausibility than was required between 1919 and 1929. But we also have a very real need for the sort of "wonderfulness" that Ray Cummings had and was able to share with his readers—in today's terms of expression.

BOB OLSEN was also a "name" when I first started reading science fiction, known chiefly for his fourth-dimension stories. While his plots and characters were on a juvenile level, and his yarns were interlarded with textbook-type lectures and dubious extrapolations upon fundamental misunderstanding of the fourth dimension, he did keep his tales within reasonable bounds. The inner logic was sound enough and his speculations never expanded in all directions, to wind up like the John Russell Fearn and A. E. Van Vogt sort of fairy-tale nonsense, where nothing is believable because anything can hap-

pen—and usually does. The problems were solved within the area originally described, science-fictionally speaking; and rabbits out of the hat were old-fashioned plot "surprises" common in popular fiction at the time. The marines might come on stage at just the right moment for our hero—but, at least, he didn't build a secret weapon at the eleventh hour and wipe out seventeen galaxies in one swell foop. As his article in *Future Science Fiction* Number 33 indicated, Bob Olsen cared too much about science and science fiction to cheapen them with card tricks.

TO MANY fans, the years between 1933 and October 1937 are the "golden age" of magazine science fiction. (For the record, that isn't *my* "golden age", which was 1929 to 1933—I'd call 1933 to 1937 the "silver age".) This was the period when Street & Smith revived *Astounding Stories* (having bought the title from Clayton, the original publisher), and put it into the hands of F. Orlin Tremaine.

Few science fiction readers had ever heard of him before;

but it was not long before it became apparent that the magazine was under the control of a man who loved science fiction, thought it worth serious attention, and was determined to raise the standards of the field, according to his own lights.

It is easy to question those lights, to bring forth exhibits of dreadful nonsense and atrocious writing from the pages of the magazine during this period. It is also a simple matter to prove that Tremaine was so eager for ideas that he often didn't seem to care how wild and woolly they were. He wanted readers to think—that was plain—but his enthusiasm frequently crowded out discrimination as to what was worth serious thought. I suspect that Hugo Gernsback had some of these amorphous “thought-variants” in mind when, after 1936, he commented in disgust that science fiction had degenerated into fairy tales for adults.

NONETHELESS, Orlin Tremaine was an editor to remember, whether you were a

fan through the exciting years of his *Astounding Stories*—and dullness was rare in those times—or came to this form of reading long after the “Tremaine” variety of science fiction had become obsolete. (It was obsolete in 1941, as the failure to “repeat” with *Comet* proved.)

For, just as Ray Cummings played a considerable part in preparing the ground for *Amazing Stories*—helping to create a public for an all science-fiction magazine by virtue of his contributions to *All-Story*—Orlin Tremaine revived interest in magazine science fiction at a time when it seemed likely to disappear. It was the success of the Tremaine *Astounding* that made it possible for John W. Campbell, Jr., to offer his contributions to the field. Campbell started with a substantial audience, backing which made it possible for him to experiment and return science fiction to a sounder footing, scientifically speaking; while retaining and enlarging, for the most part, upon the improvements Tremaine had made in story value.

(The question of why an editor who insists upon sound,

logical science and good writing in science fiction, can come up with numerous tales where the science is twaddle and the writing pitiful, or ride various pseudo-scientific fads, will never be out of order—because there will be such editors so long as there are science fiction magazines for them to edit. As the gentleman said, when summoned to court for yet another criminal assault, "Ain't nobody perfect, Judge." But there's a vast difference between having standards to which one cannot always attain and not caring about standards in the first place.)

A LIST OF authors, still active, who made their first sales (or first science fiction sales) to F. Orlin Tremaine would include Clyde Crane Campbell (now known as H. L. Gold), R. R. Winterbotham, Eric Frank Russell, Robert Moore (better known as Robert Moore Williams), L. Sprague de Camp; and, from the later, *Comet* period, Sam Moskowitz (whose name was misspelled on the contents page, Dr. A.), and Robert W. Lowndes. Authors already

known, but whose careers were substantially furthered by Tremaine include Jack Williamson, Donald Wandrei, Wallace West, E. E. Smith, Ph. D., Frank Belknap Long, C. L. Moore, John W. Campbell, Jr., Raymond Z. Gallun, Edmond Hamilton, P. Schuyler Miller, and Robert Willey (better known as Willey Ley). There are many more no longer with us, or retired from science fiction; and although today's magazines repudiate in practice a great deal of what he strove for, the lists above give a part of the reason why Orlin Tremaine will not be forgotten soon.

FOR MOST of 1936, *Weird Tales* appeared on sale the first day of the month it was dated; so it was early in March 1936 that I found "The Graveyard Rats" by Henry Kuttner in the new issue. "Another fan has made it", was the thought of many of us readers, for we had seen a number of Henry's letters in "The Eyrie"; and just last year (1935) Robert Bloch had risen from the letter department to the contents page.

In February 1938, the new issue of *Thrilling Wonder Stories* (dated April), featured Kuttner's "Hollywood On the Moon", first of a series of clever, still-enjoyable tales in the "screwy animal" tradition. (Which started with Stanley G. Weinbaum; for some years after authors vied with each other to see who could dream up the most peculiar extra-terrestrial critter.) Toward the end of the year, he appeared in *Marvel Science Stories* (which was an attempt to sell science fiction to the "spicy horror" readers, and vice versa), and fan's heads shook sadly as they told each other, "Kuttner's become an awful hack" and wondered what the rates were.

He hadn't. Nor do I believe that he would have become a hack, even if he'd never met C. L. Moore (Catherine Louise Moore) who had made an enviable reputation in *Weird Tales* from her first appearance there with "Shambleau" (November 1933). On the other hand, I don't think it entirely coincidental that the Kuttner product improved after Henry's marriage to the creator of

Northwest Smith and Jirel of Joiry.

THERE HAD always been humor and cleverness in his tales. The humor followed the lines of Thorne Smith and Lewis Carroll, the latter influence predominating as Kuttner began to explore his medium more thoroughly, but it was never "just imitation". There was magic and fantasy. He looked into the Merritt-type fantasy, avoiding the excesses of the elder mood-painter; but, after all, we didn't get just "Merritt, the way he *should* have done it". The two are linked in the way that Belknap Long's "Space Eaters", "Hounds of Tindalos," and "Horrors From the Hills" are linked with Lovecraft—but Belknap was no imitation Lovecraft. The differences are more significant than the similarities in both cases.

Then, in 1943, we began to see that succession of stories and novels which made Henry Kuttner a name not only to greet with liking but profound respect. There was still cleverness and rib-tickling, but there

was depth in thought and character presentation—and, best of all, reader approval, which brought financial success in improving the medium. He could have sold just as much, perhaps, had he contented himself with writing merely good, salable stories. These were the war years, and editors were hungry for material, often forced to accept material which did not add up to good reading. But the metamorphosis in Henry Kuttner's output showed more than skill, constantly increasing: it showed love for his vocation.

And that is what links these four men together, separated as they are in time, temperament, education, and ability: love for their calling as science fiction writers. Ray Cummings, Bob Olsen, and Henry Kuttner wrote for a living; they had to write constantly whether they were in the mood, whether they had anything to say—and this could only result in numerous stories which showed nothing more than the ability to write a tale that hung together. Orlin Tremaine, as editor of a monthly magazine, had to meet

deadlines every month; no editor's judgement (irrespective of the material available to him) is always at his best. But these three authors, and this editor, wrote and edited with their hearts, not with their guts. And because love was combined with talent (for even love cannot put talent where it just doesn't exist), their best work is memorable. They all may have their successors, no one can ever replace them.

LORD DUNSANY'S heart was in fantasy, and I have saved him for last and most brief mention because he did very little which can be called science fiction, even by stretching the definition. He believed in literature, and his work shows dedication to his beliefs. That his ideals were not wedded to very sound understanding of art is shown by some of his critical articles—one of which appeared in the *Saturday Review* last year. No matter. He worked beautifully within his limits, and some of his tales make consideration of his limitations superfluous; nothing in their neighborhood can detract from them. RAWL

A MATTER OF SYSTEMS

Dear Mr. Lowndes:

No one seems to try to get to the bottom of the matter when they write in these definitions of science fiction. Off-hand, I don't think that there's been a one of them that didn't have a hole in it somewhere. There is always a story generally considered to be science fiction that just won't fit.

Now it seems to me that almost all of the definitions fail to make the distinction between "science" and the philosophical concept that science is founded on. And it is this concept that provides the foundation upon which science fiction is based.

There are two kinds of stories that one can write: stories about things that are, and stories about things that aren't.

The first group comprises the body of general literature—the detective, the western, the

love story, the adventure story, and so on—and no matter how improbable the events in these stories may be they are still theoretically possible. The second group encompasses the field of imaginative literature—fantasy and science fiction. The things that happen in these stories just can't be done at the time the story is written; they are products of the author's imagination.

In the field of philosophy there are two basic philosophical systems. They are the Finite System and the Infinite System.

The Finite System is the created universe. It is a system brought into being by an agency not subject to those laws it has imposed on the universe. In Christianity, for example, God created the universe; He established order and law in it—but He is not Himself bound by any of those laws. If He

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wishes to nullify the law of gravity, or alter it, or suspend it, He may. He can exterminate mankind one minute and recreate him the next. He is subject to no control but the control He imposes upon Himself.

In the Finite System, then, law descends from an agency not itself subject to that law.

The Infinite System is the other side of the coin. In it, law is an *organic* part of the system. There is nothing superior to it. Everything, without exception, is subject to order and law. If the law of gravity, for instance, is in effect today, it will be in effect tomorrow—and it was in effect at any time in the infinite past. It is from this point that the logic of science and the science fiction story spring. The world of science depends on the existence of eternal law. The scientific method is based on it. If one exception is admitted the entire structure of scientific argument collapses.

So then, in the Infinite System all things are equally subject to eternal law.

Fantasy stories—"pure" fantasy, supernatural fiction, fairy tales—use the Finite System as

a foundation on which to build the narrative. Reflection will show that the magicians, the demons, the whole enclave of supernormal creatures to be found in fantasy fiction, derive their powers from above. Either by implicit or explicit statement the stories reveal a supreme agency capable of altering the laws of the universe—that is to say, an agency capable of performing miracles.

In the Infinite System, though, no alteration of universal law is possible; and it is this system that science fiction utilizes.

Whenever God (or an agency of comparable power) appears in a science fiction story He becomes a creature of vastly lesser power than He is in the fantasy story. In science fiction, He is as bound by the forces of the universe as mankind is. He may have a greater insight into these forces, He may have a greater ability to use these forces, but He cannot escape or change them. Del Rey's "For We Are A Jealous People", published in one of the *Star Science Fiction* paperbound books, is a fine example of this.

The definition of science fiction, then, is: The branch of imaginative fiction in which all things are subject to law.

If, perhaps, that definition sounds rather too simple, it is easy to test its validity. The reader has only to select a science fiction or fantasy story at random. If there is any agency in the story that—either by express statement or implication, is not subject to the laws of the universe, it is a fantasy story. If there is no agency of that kind—then it's science fiction.

I've been a reader of science fiction and fantasy for just about twenty years. I can think of no story generally agreed on as a science fiction or fantasy story that contradicts that definition.

Can you or your readers?

RICHARD KYLE,
2181 Sepulveda Avenue,
San Bernadino, Calif.

Your statement, "In Christianity, God created the universe; He established order and law in it—but He is not Himself bound by any of those laws. If He wishes to nullify the law of gravity, or alter it, or suspend it, He may.", contains some hidden

assumptions which ought to be brought out. (1) That we know what the "laws of the universe are" (2) That the Bible—Christians' source of direct revelation—is *literally* true, correct, and complete at all points. Neither of these two assumptions is valid.

1. We know considerably more about some of the "laws of the universe" than did the men who wrote down the sacred writings which we call the Old and New Testaments; but we still do not know all the laws, and are constantly finding that our "knowledge" of them at any given time has been incorrect or incomplete, or both. Granted that "God is not bound" in the sense that the creation is inferior to the Creator, and/or that He has the *power and ability* to nullify, alter, or suspend the laws of the universe—this does not mean or prove that He actually does so. The most informed Christian belief is that God's seeming "violations, nullifications, alterations" of the laws of the universe are actually manipulations of higher-precedence laws. This may seem (to our ignorance) to be infringement of the laws we "know".

If you were to explain to

a primitive that the law of gravity is universal—putting it in terms he could understand—might he not think, upon first seeing an airplane, that here was a suspension of the universal law? If he had discovered that metal sinks in water, might he not be similarly misled upon first seeing a great metal ship that floats?

2. Christians believe that everything in the Bible is “true”, but not that it contains *all* the “truth”, there ever was or can be; nor is everything in it on the same level of “truth”. That is, some parts present accurate accounts of what actually took place, “historical truth”—but not necessarily 100% complete; some give substantially accurate accounts of events, with errors of detail, or embroidering of detail—“historical journalism”; some relate what particular persons believed to have happened, or describe visions, etc.—“subjective truth”; some *symbolize* truths, though the accounts are not *factual* (allegories, parables, stories—the books of “Ruth” and “Jonah”, for example, are fiction illustrating truths); some *interpret* factual events, and other

accounts, again illustrating truths.

So the Christian system is “infinite” in one respect, and “finite” in another. God has “infinite” power, but has chosen “finite” bounds in certain respects—free will, for example: the Creator never used His infinite power to force obedience against man’s determination to disobey; every man is free to choose “evil” if that is what he wants. It isn’t then that God “cannot escape or change” the laws of the universe, but that, for purposes no one in this world knows fully, He has chosen not to do so.

Otherwise, we agree with your differentiation between infinite and finite systems in fantasy and science fiction. Theologically-based science fiction is necessarily difficult; for the sake of verisimilitude, God must be made to appear to be limited by the laws of the universe (or plausible extrapolations upon them) *as we know and understand them at the time the story was written*. (What we call the “supernatural” is therefore under law and order, but we do not know what these laws and this ordering may be at the time.) Its area

is constantly expanding and contracting—contracting as we discover more in the realm of “natural” law, and this indicates still more in the realm of the (currently) “unknown”.

SIDELIGHTS ON LONDON

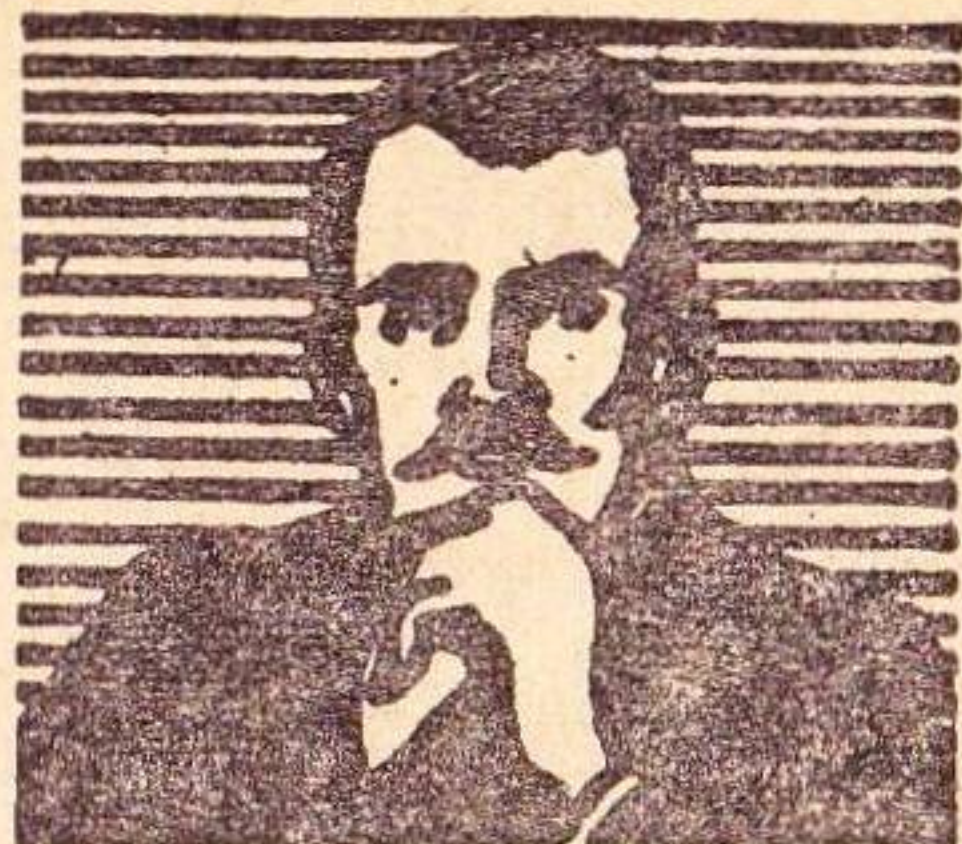
Dear Mr. Lowndes:

Wonder if I can tack a few extra words to Bob Madle's article on the World Science-Fiction Convention. I was one of the 55 who made the plane trip and took over the King's Court Hotel in West London.

There were some colorful highlights. Ken Slater, for instance, brought two trunks of books and set up an exhibition right outside the liquid refreshment room. He caught us coming and going. (This strategical position was, no doubt, a result of his studies as brass in the RAF).

E. C. Tubb, co-auctioneer, whom Bob describes as “impossible” could also be called highly improbable. This lanky Englishman, with wild hair flowing over his spectacles, kept the air bluer than the cigaret smoke in the room. Sam

[Turn Page]



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Moskowitz was equally funny, and the auctions were the most hilarious times of the four days.

Belle and Frank Dietz Jr. gave a party in which George Nimms Raybin distinguished himself by drinking three pitchers of water one after the other. A great highlight of the meeting was seeing George eat his breakfast, and Madle's, and Dave Newman's, and mine. Incidentally, Dave Newman—one of our hosts and the most friendly of all of our friendly Britishers—sporting a magnificent pair of mustaches which he shaved *half* off in honor of our masquerade party.

We all enjoyed the convention—even those who worked the hardest. I should mention here Belle and Frank Dietz Jr., and George Nims Raybin, who were the behind-the-scenes workers on the London Trip Fund and the very much on the job workers at the London Convention. (Couldn't even get them away from their duties to see the Peter Pan statue in nearby Kensington Gardens.) And I would like to thank them personally and publicly, with your permission,

for making the whole trip so wonderful.

MILTON SPAHN,
1337 Merriam Avenue,
Bronx 52, N. Y.

TYPES OF COVERS

Dear Mr. Lowndes:

I am moved to write by one of the questions on the Reader's Preference Coupon in the April *Future*, namely, the one asking "Do you prefer this type of cover to the previous one?" Reply: *What* previous one? The last time you ran anything which could be even remotely considered as a different *type* of cover was on issue #33; the last *really* "different" cover was on #32. And as far as that goes, Columbia Publications has never featured any wide variety of cover styles—your covers all look alike, and they are all definitely second-rate. (For a magazine with real variety in covers, take *Fantastic Universe*, the covers of which range from first-rate to abominable—mostly the latter, unfortunately.)

With this out of the way, I might as well give the rest of

the ratings: (1.) "The Case For Earth"—Russell—even if I did first read it a couple of years ago in *Nebula*; (2.) "Problem In Ecology"—Berry—good ASF-type story; (3.) "The Night The T-V Went Out"—Smith—fairly good anti-Utopia, but he tried to pack too much material into a short story—would have been better as a novelet; (4.) "The Silver Cube"—Hellington—nothing extra; (5.) "The Zoet Space"—Goodale—anyone who's read much stf is going to keep one jump ahead of the story, which isn't good; (6.) "Just Evie And Me"—Smith—nothing especially wrong with this; nice new twist and all, but it just didn't appeal to me; (7.) "The Woman You Wanted"—Silverberg—Oh, come now! I know you have to sell magazines, but does this kind of pseudo-pornography (which implies by title and illustration that it's

[Turn Page]

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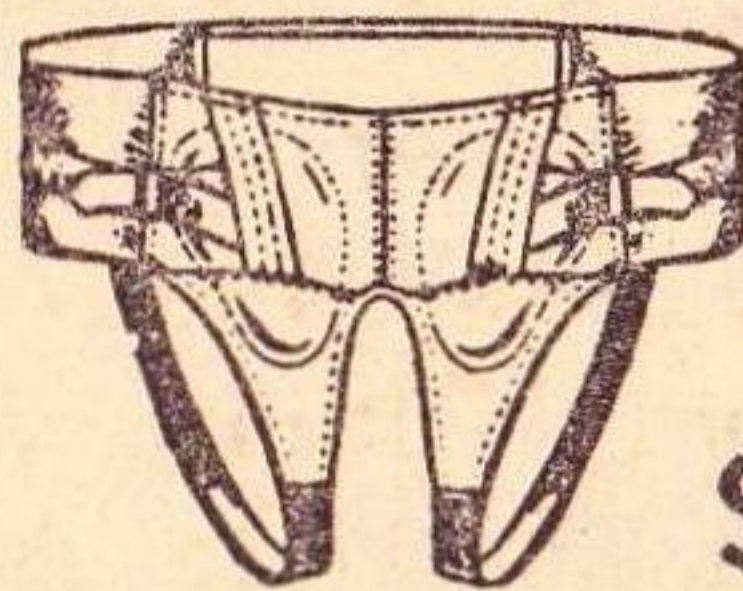
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going to be real sexy and then doesn't deliver) really necessary? It smacks of the techniques used in *Amazing Stories*, and has about the same quality. If you want to print sex, go ahead, but quit trying to palm off commercialized (watered-down, that is) pornography.

Of course, one bad story out of 7 isn't a bad average; the two really good stories more than balance it. But I still want to protest...if you can't get stories that treat both science and sex honestly (and admittedly, they are scarce) you could at least follow the trend of "historical" novels and treat the sex honestly and openly. Provided you're going to use sex at all, that is.

I believe that possibly the most enjoyable single item in this *Future* was the editorial. I greatly appreciate these comments on old-time stf; for that matter, I generally enjoy all your editorials, which I consider the best in the field.

I think knight missed one of the more telling points against Moskowitz; that Sam wrote as if stories about children and stories about childhood were

identical— I'm no authority, but even I know that there's a difference.

I keep giving a definition of science fiction which nobody pays any attention to, but here goes again; science fiction is that branch of fantasy wherein scientific or pseudo-scientific explanations are given for supernormal phenomena. (Supernormal phenomena being defined as any phenomena beyond the power of science at the time the story was written...if you know a better term, substitute it; I know that "supernormal" is a bit awkward.) Stf is a branch of fantasy, after all; the difference between them being only in the manner in which the unusual is explained; if the explanation is supposed to be scientific, the story is stf; if it's spiritual, magical—or if no explanation at all is given—then the story is fantasy.

ROBERT COULSON,
105 Stitt St.,
Wabash, Indiana

Perhaps the question could have been phrased better. What we were trying to discover was whether you pre-
[Turn to page 130]

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ferred space and/or spaceship scenes; wanted, or did not object to, or were opposed to girls on the cover; liked story-suggestion rather than scientific idea suggestion covers, and so on.

"The Woman You Wanted" dealt with what struck me as plausible solutions to some sex problems that might arise in the future; admittedly, it had the light touch, being more of a romance than a scientific exploration. Can't say I see any "pseudo-pornography"—let alone the genuine article, in it—and there wasn't any intention of same.

Perhaps "super-technical" would be closer to the term you want when you say "supernormal"; that would cover inventions, discoveries, etc., which are handled in a scientific manner by the author (internal logic consistent, etc.) but which are just beyond present-day technology. For example, time travel is doubtful—but assuming the nature of "time" to be such that you could travel through it, a time machine remains super-technical; same with things like the "intertialess drive", "hyperspace drive", and so on.

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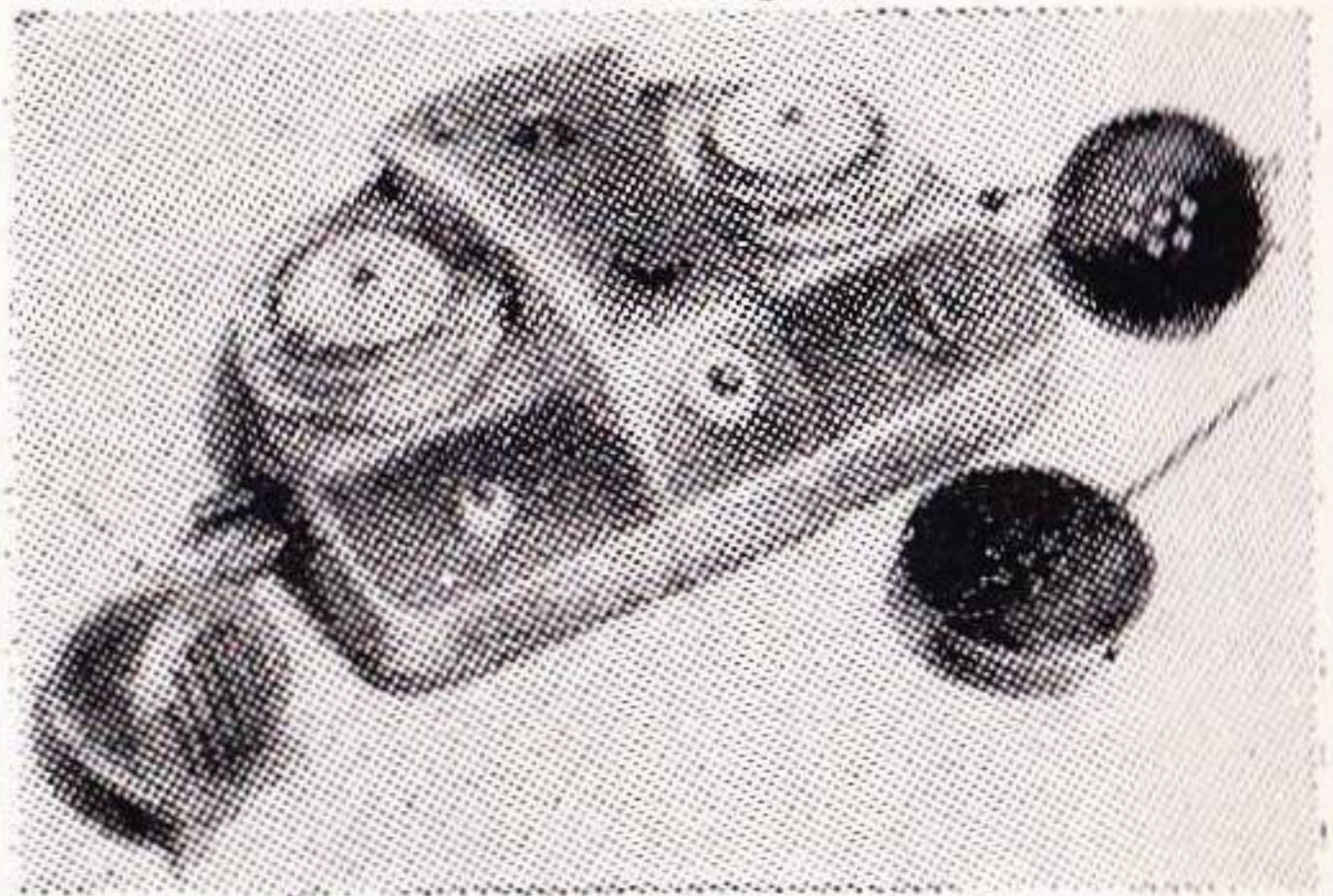
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I enclose \$..... (check or money order) for items checked below. Please send at once under the conditions of your warranty.

- COMPLETE TELTAPE RECORDER, Microphone, Head Set, Magnetic Recording Tape, Spare Reel and FREE Instruction Booklet. \$29.95, plus \$1.25 postage and handling.
- Patchcord A, \$2.00
- Patchcord B, \$2.00
- Stetho Set, \$4.95
- Magnetic Tape, \$1.25
- Empty Reel, \$.35
- Set of 4 Batteries, \$.80

Please Print To Avoid Errors And Delay

Name.....
Address.....
City..... Zone..... State.....

Send C.O.D. Enclosed is \$3.00 deposit. I will pay postman \$..... plus all C.O.D. and shipping charges for items ordered.

Just Imported:

World's Smallest Adding Machine

Fits In Your Pocket! Saves You Time, Money And Mistakes! Perfect For Salesmen, Students, Housewives, Business Men, Storekeepers, Etc. Adds and Subtracts Up To 1,000,000 In Seconds!

IT NEVER MAKES A MISTAKE

WHAT IT WILL DO FOR YOU:

- BALANCES CHECK BOOK
- KEEPS YOU ON BUDGET
- CHECKS GROCERY TAPES
- DOES HOME WORK
- TOTALS SALES SLIPS
- CHECKS SCORES
- TOTALS CAR MILEAGE
- DOES 1001 OTHER ADDING AND SUBTRACTING CHORES—EACH IN SECONDS!

FROM WEST BERLIN, GERMANY, COMES NEWS OF AN AMAZING time saving, work saving, money saving invention. The world's smallest, precision made adding machine that adds up to 1,000,000 . . . subtracts to 1,000,000 . . . does it in seconds . . . and never makes a mistake!

A beautifully made machine that saves you endless hours of mental work every year . . . saves you time . . . cuts out costly mistakes . . . lets you check bills, catch errors, add up

SAVES YOU MANY DOLLARS!



Here's a money saving use for amazing ADDIATOR, the world's smallest adding machine. Add up your Super-Market items as fast as you take them off the shelves. Know how much you're spending as you go along! SAVE by knowing when to stop spending. Stay within your budget! And eliminate costly mistakes at the check-out counter by knowing the total before the clerk has punched a single figure!

your budget, keep scores and perform 1,001 other adding and subtracting chores . . . all in a matter of seconds and without a single mental effort on your part!

A German Invention

The secret is a scientific principle acknowledged to be perfect by experts throughout the world. Developed by German scientists, ADDIATOR is now being used all over Europe. Pan American Airways, American Express and other companies as well as millions of people like you in 51 countries use and rave over ADDIATOR.

From all over come reports of nerve-wracking additions of long columns becoming easy as a game . . . of the speed . . . the sureness . . . the simplicity of this miracle machine! Think what this means to you. Now at last you can check everything you buy . . . every bill . . . every statement . . . and never lose a penny because of mistakes. You can add up your budget . . . check your children's school work . . . add up checks . . . inventories . . . records of car mileage . . . expenses keep track of what you spend each day . . . yes, do 1,001 everyday adding and subtracting jobs.

3½ MILLION ADDIATORS IN USE, SAVING TIME, WORK AND MONEY

Used By European Governments, Giant Firms Throughout the World!

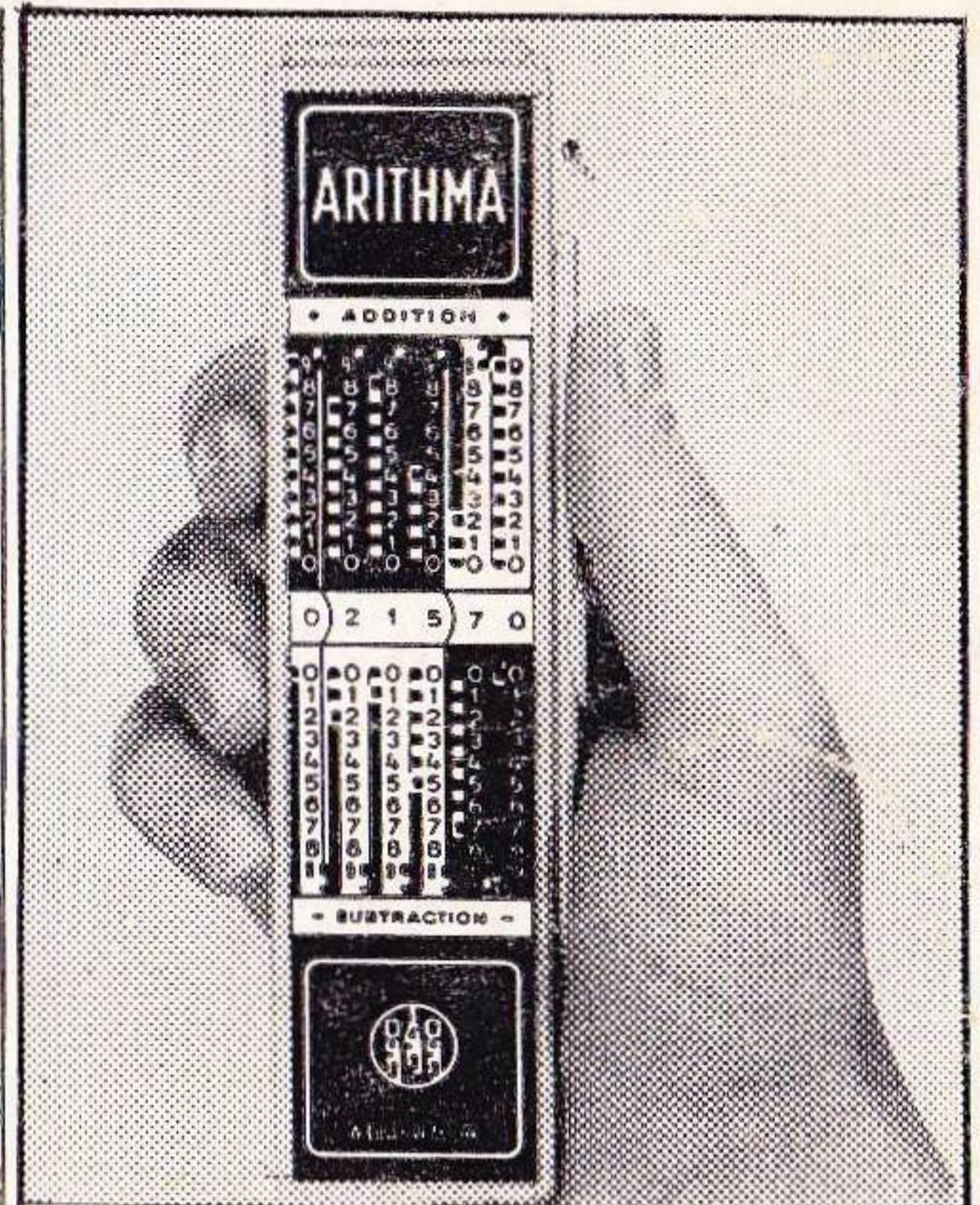
Marvel of Design Never Needs Repairs

Not a toy—not a gadget. Amazing ADDIATOR and all its moving parts are constructed entirely of aluminum or brass. It lasts a lifetime. Best of all, even a child can add or subtract up to 1,000,000 without a mistake.

ADDIATOR Is In Short Supply!

All that amazing new ADDIATOR costs is \$3.98. That's because it is made in West Germany. Yet it is just as accurate as costly office adding machines. But because it comes from West Germany, and the demand in Europe is tremendous, the supplies available in this country are very limited. Only if you act at once can we guarantee to fill your order. This free trial offer will not be repeated in this magazine this year. To get your ADDIATOR for yourself or for a gift, mail the free trial coupon today.

ADDIATOR is sent to you complete with FREE CARRYING CASE with Full Money Back Guarantee.



ADDIATOR Is Super Accurate — Super Fast!
Add or subtract the longest columns without effort. Addiator checks bank statements in seconds . . . checks bills . . . budgets . . . does homework. NO MORE MISTAKES, keeps a running total, automatically!

FREE TRIAL OFFER

Stop being a slave to figures. Avoid the costly mistakes everyone makes of being too lazy to check bills and statements. Try amazing ADDIATOR for one week free. See how beautifully constructed it is . . . how easy to read the numbers . . . how smooth and silent the operation. See for yourself how ADDIATOR adds up your bills in seconds . . . totals your grocery bills like lightning . . . checks

your bank statement in nothing flat . . . figures up your mileage . . . does 1,001 adding or subtracting jobs for you and NEVER MAKES A MISTAKE. Use it to check bridge, canasta and other scores. Let your children check their homework in seconds. Put ADDIATOR to every test. If you don't agree it will save you endless time, effort and money, you have used it entirely free. It won't cost you a penny.

3½ Million Amazing ADDIATORS Now In Use Throughout The World. Be The First In Your Area To Own One

MAIL FREE TRIAL COUPON TODAY

HARRISON HOME PRODUCTS CORP., Dept. FD-8
31 W. 47th St., New York 36, N. Y.

Please send my ADDIATOR with free carrying case as checked below for one week's NO RISK TRIAL. IF ADDIATOR does not do all my adding and subtracting for me in seconds . . . without ever making a mistake . . . if it doesn't save me time, effort and money . . . then you will refund my money immediately including postage.

- () I enclose \$3.98 with full money back guarantee. Send ADDIATOR postpaid. I save all C.O.D. charges.
- () Send ADDIATOR C.O.D. I will pay postman \$3.98 plus C.O.D. postage. Same money back guarantee.

Name _____

Address _____

City _____ Zone _____ State _____

SAVE! Order one ADDIATOR for yourself, another for a gift. TWO ADDIATORS sent for \$6.98. You save \$1.00.