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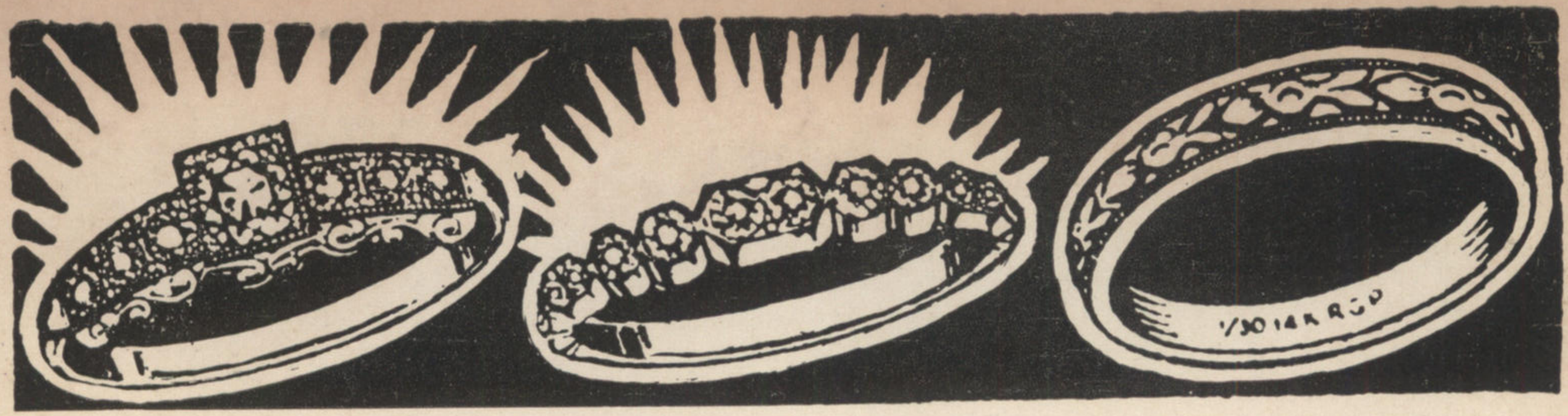
YOU DO SOMETHING TO ME

by CALVIN M. KNOX



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No. 41
February,
1959
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LOSE WEIGHT OR MONEY BACK

illustration
by
ORBAN

THE PITY OF THE WOOD

by Joy Leache

It was late...very late.. when Tob began to realize that Gloria was something more than she seemed to be. And that her love for him brought her great sorrow...

Tob rocked gently with the rest couch. The dull pain in his chest relaxed under the influence of the three tranquils the psychotech had given him. He composed himself, staring at

Gloria had moved all the furnishings away, and turned off the lights. She knelt in front of a brazier, set up between two candles...

the dimly-lit ceiling, preparing to think about his tragedy. He could, unlike many tempos, remember the exact moment that it started.

THE ATMOS ship *Aetna A8* left the star ship *Aetna* on the hundred and third day of Tob's twenty fourth year of life, spiraling down toward the second planet of an orange-red star. The rest of Aetna's fleet headed for the other seven planets of the system.

The *Aetna* was in the Exploration Service, hunting for planets: colonial planets, trading planets, exploitable planets. Tob went along as anthrotech, in case of intelligent life. Every atmos ship carried an anthrotech, and every anthrotech carried a large film library. Intelligent life was rare, and anthrotechs generally had nothing to do.

Tob first looked at the second planet when Hollon, the biotech, pointed to the view screen. "Look at that forest."

Tob saw a curving white surface, circled with a blue-green belt, drawing close. "Cold but inhabitable," he said.

"Hoping for homo sapiens?" Hollon laughed.

"Never find it where you expect it," Tob grinned.

"Captain's going to love those trees."

"If they *are* trees," Tob said. "Could be geoforms."

They were trees.

THE SLIM, silver ship settled into the only large cleared surface on the planet, on the equator, near the day line, and the crew crowded to the viewers. Hollon and the geotech opened the appropriate switches and the atmos ship began to record.

The captain asked Hollon, "Suits?" but Hollon shook his head.

"Too soon to tell" he said. "Somebody wake the chemitech and get him to check." He turned to the viewer. "Conifers," he identified the trees, and added, "Look, Tob. There's homo sapiens."

"Dames," Jimmy shouted.

Tob looked.

The faces glowed with the vivid orange dawn. The trees were real and tall, their blue-green foliage moving in a slight breeze. The crowd was as real

as the trees, in rough woven or knitted garments, standing still, looking up at the ship. There was hope on the faces.

"Whoop!" Jimmy said. "Look at 'em all." Jimmy's duties as pilot were over until the return trip, and he knew it.

"Aren't scared," Tob noted.

"Look human enough," Hollon added.

"Look at the red-head," Jimmy said.

"Beautiful," Tob agreed.

That was Gloria. But he hadn't known. He was only curious about this strange group of humans, far from the rest of their race. They looked culturally primitive.

HOLLEN said, "Some hold their ears."

"Rockets cut," Jimmy pointed out.

An old man, flanked by two others, came out of the crowd, moved toward the ship. He waved his arms above his head.

"Cut on the audio," the captain ordered.

"Speaks Terran," Tob interpreted. "Old form."

"It is safe," the old man shouted in a cracked voice. "We are Terrans. The planet is safe."

Tob activated his mike. "Hokay," he said, trying not to sound surprised. "We're coming out. We're Terrans." He thought a minute. "Friends," he added.

"What's he carrying?" Hollon asked.

"Piece of steel tubing."

"Looks like stainless," said the roused chemitech.

"I'm going out," Tob said.

"Open hatch," said the captain.

The flexible climber slid out of the hatch and clanked into place against the hull.

Tob, on the rocking couch, remembered the silence of that orange morning. Even here, in a rest cube, in supposed quiet, he was surrounded by the murmurs of the Aetna's *machinery. There, at the top of the climber, there was nothing but the shifting whisper of leaves. Outside, all silence; inside, the excited turmoil of his first major contact.*

THE OLD man met him at the foot of the climber.

"How did you come here?"

Tob asked carefully. Courtesy was important in non-tech cultures.

"Shipwreck. Four hundred and twenty years ago, by Terra reckoning."

Tob searched his memory. *Planet-ship collide equals shipwreck,* said his mind. "Do you shake hands on greeting?" he asked, feeling young and inexperienced.

The old man held out his right hand. "Yes. I am John Coates, Holder of the Long Tube." He held out the stainless steel tubing in his left hand, and smiled. "You might say leader, or president." His eyes were filled with wisdom and sadness of old age.

Tob realized that the old man sensed his confusion, but the knowledge helped him. "Tob Hurst," he said, "anthrotech of the *Aetna A8*. The atmos ship," he added, pointing. He liked the old man's gentle kindness.

"I'm called Long Tube," John Coates said smiling. "These are my colleagues, George Lawrence, Holder of the Thick Tube, and Henry Worth, Holder of the Short Tube."

The other old men bowed courteously and shook hands.

THE ATMOS ship's crew reached the ground. More hands were shaken.

"In the days of the shipwreck, you would have been called an anthropologist?" Long Tube questioned.

Tob considered and nodded.

"Then you must be very eager to examine our way of living."

"Yes, sir," Tob said, warming up to the interest in Long Tube's voice. "An isolated culture group like this always is interesting. And when a conscious effort has been made to retain it undamaged, as the case seems to be here, it is fascinating."

"I wish I could tell you all that you need to know," Long Tube said regretfully, "but I must conduct trading negotiations with your captain."

"If you would only allow me to wander and ask questions as I wish . . ." Tob began.

"I will, and I will give you a guide, too. Gloria, my brother's granddaughter, has read the old books and knows our history well."

Tob turned and saw her coming through the crowd. Tall, graceful, large-eyed, red-gold hair gleaming in the orange light. Her young eyes held the same wisdom and sadness as Long Tube's.

Tob kicked restlessly against the soothing rhythm of the rest couch. The memory of her face was still vivid, but the first words they had spoken were lost to him.

THEY MOVED away from Long Tube, through the crowd, toward the village.

"Why does everyone look so unhappy?" he asked.

Her eyes were brown, shot through with gold. "Because you do not understand us."

Tob glanced back to the atmos ship, where Long Tube and the captain were talking busily. "Language changes constantly," he said. "The captain is doing hokay." He faltered. "I mean, the captain is speaking with Long Tube without much trouble."

She smiled. "I understand your 'hokay'."

He felt that she wished to change the subject, so he did not try to clarify the question. "Where are we going?"

"To the library. I thought you would like to see the old books first."

THEY ENTERED the village, which was laid out like a tic-tac-toe pattern, with a place of lawns and trees in the center square.

"This is Algonquin," she said. "It is the only town on the planet. We have an agricultural economy, and, as there are no dangerous carnivores, we can live on our farms."

"It looks like a study exhibit. New England village, 1850."

"That was a whim of the survivors," Gloria said. "They had the same resources as the settlers of North America, and it amused them to imitate the building style. We have continued it, as it is the easiest to build and the most practical in this climate. It is not overly warm here."

Her guide-book tone, coupled with the sadness in her eyes, irritated Tob. He wondered if she pitied his lack of knowledge, and how much intelligence she credited to him.

They entered the library in silence. Tob was determined not to show any more green eagerness.

"These books are the histories of the Wood," she said, "The survivors called it the Wooden Planet, but we have shortened it."

TOB LOOKED at the section of thick, leather-bound books. "Why wooden?" he asked, taking his notetaker out of his pocket.

"We have never discovered any copper, tin, or iron deposits. There may be none, or they may be deep, or under the ice. We cannot mine without metal tools."

"You have only the metal from the wreck?"

"Yes." She smiled at him. "That is why the steel tubes are badges of office. We have no facilities to rework most of the metals in the ship. They are kept as historic treasures."

The red-gold hair lit the dim building, Tob found her pity bearable. Her voice and eyes were soft; she did not hold him in contempt.

"What do you use for fuel?"

She shrugged. "Wood."

"You burn wood?" His voice sounded high, although he tried not to reveal his shock.

"It is all we have."

"On Terra, wood is kept in museums," he said apologetically. "I know of no planet where it is not regarded as a luxury."

Her eyes widened. "I cannot imagine that," she said. "Are there no trees?"

"There are some, in gardens and parks. They are valued for their beauty."

"We do not waste our wood," she said defensively. "We plant where we cut. and we never cut wantonly. The survivors were emphatic in their instructions to preserve the wood." Her face became thoughtful. "We never knew why until now. We thought it was part of the attempt not to become savages. We thought we were a beggar planet. But we are not."

Tob saw her eyes smile, as well as her lips.

The memory was gall to him. She had smiled that way seldom, and the beauty of it was like the rise of the planet's orange sun.

GLORIA continued, "There are many things we need. Power, machines to make paper," she touched the books. "These are written on skins. There is so much we need. And we have the wood to buy it."

Tob said, "You are beautiful when you are happy."

Her eyes darkened a little, and she turned away.

"I have to go back to the ship, and get my recorder for these," he said, asking himself bitterly if he was an anthrotech or not, blundering around saying anything he liked, without knowing the taboo pattern.

She smiled again, briefly and beautifully. "Come," she said. "The people have gone home now, to prepare for the conference."

Tob didn't ask her how she knew; he was afraid of violating another taboo over such a trivial thing. They walked slowly back to the ship, Tob basking in the glow that emanated from her.

Tob cried out in the audio-conditioned rest cube. The couch swayed beneath him, changing its motion slightly, reminding him that these things were only memories.

SHE LEFT him at the door of the house which had been given the atmos ship's crew.

The captain sat on skins piled on a wooden frame, staring at the whitewashed wall. He looked worried. Tob didn't disturb him. The captain liked to worry alone.

"Ball?" Jimmy grinned from the depths of a heavily padded chair.

"A chick both bright and beautiful," Tob said. "All the data I can record."

"What does an anthrotech need?" Jimmy asked rehetorically.

"Found anything subsurface?" the captain asked, frowning.

"Nary. All as it seems, my guess"

"Something's hiding," the captain said in a positive voice. "From the voices and expressions, and the general mo, you'd think we were going to die."

"Fret and fuss," Jimmy said cheerfully. "Let's live it while we got it."

"What data have they got, we don't?" the captain asked, ignoring his pilot.

TOB MADE a serious effort to consider possible disaster. "Hardly any metal. Corrosive atmosphere? Ship disintegrating?"

"Chemitech says no," said the captain. "Long Tube told me about wood. Fabulous." He frowned.

"Does all the fuming for *Aetna*," Jimmy grinned, jerking his thumb at the captain. "Think of something good."

"Bunking's good." The captain admitted. "These movables bring a ransom back Sol side."

"Advise natives trade or evac?" Tob asked, mocking seriousness.

"Guess trade," the captain said, scowling again. "They want metal. Not sure. Something nokay here."

"Any danger?" Jimmy asked lazily, peeling a native fruit.

"Not signal red," the captain said seriously. "Yellow, maybe. Adult natives don't talk much except to us and their kids. Gives me itch."

"Find out at conference tonight, if can," Tob promised.

Jimmy laughed. "Conference is little talk, much food, more drink, Connie tells me." He winked, unsealed his plasti-leather boots. "Shut eye till palaver." He lay down with a sigh.

The captain followed suit, but with open eyes and creased forehead, worrying.

TOB WENT into the other room of the house. The chemitech was sleeping in the sunlight by the window. Hollon was sorting large baskets of specimens.

"Working well?" Tob inquired politely.

Hollon nodded quickly. "Never saw so many embry biotechs. Bring me more specimens than can handle. Books, too." He gestured toward a pile of tall, thin books. "All hand drawn. Beautiful. When's the recorder free?"

"Now. Drawings accurate?"

"Like a roborecording," Hollon said. "Amazing."

"The Wood's amazing," Tob said, sitting down. "Whole planet of people, waiting for us four hundred years. Uncanny."

"Quiet, too. Why no talk, Tob?"

Tob shrugged. "Don't know yet. Let the captain worry."

Hollon nodded. "Nice here. Peace. Work. Happy planet."

Tob could not separate the days and nights that followed. He strained with effort, but he could only conjure up a series of pictures, dyed with the vivid green and orange of the Wood. Helpful, eager natives, curious about everything, interested in the techs' work. Jimmy, surrounded by laughing girls, fashioning a lei from local flowers. Piles of exquisitely carved wood in the storehouses, created and preserved for four hundred years, waiting for the crew of the Aetna A8. *Long Tube, shrewdly bargaining for metal and fuel.*

Full of Gloria, all aspects of it, but she blurred into a red-gold haze. He couldn't remember the moment when he realized that he could not leave the Wood without her.

TOB STAYED behind when the atmos ship, with the captain and Jimmy aboard, took off for *Aetna* with a load of carved wood. The captain hadn't taken a hostage for the safety of his men on the Wood; the peace had stilled even his anxiety.

Tob finished recording the oddments and trivia of life on the Wood and stacked the recordings into the index-sort. There was nothing to do until he returned to *Aetna* to compose his report.

His fascination with Gloria increased. He had never expe-rienced such profound sympathy and genuine interest. He thought of the old books filled with romantic tales of love that never dies, and he almost believed them. It was not impossible, he thought—just unfashionable. He and Gloria hardly spoke any more, but his love prospered in the silence. The one small thorn in his rose leaf bed was that he and Gloria never seemed to be talking about the same thing when they did try to communicate.

THE ATMOS ship returned, with a nuclear power plant. Solar energy was no good in the system of the weak star. Tob broke the silence of a week. "We must marry."

Gloria's reaction surprised him. She turned away, and didn't answer for long minutes. She turned and looked in his eyes. Her own filled with tears, but she did not look unhappy. She nodded slowly, with a great effort. She broke into sobs, and threw herself into his arms.

"It will be all right," he murmured. "Terra's ways are not so strange. I'll be with you. You'll make new friends. You'll be happy. Don't cry, darling, don't cry."

The rest couch changed again as Tob writhed upon it. He relaxed, took his hands from his face. The rest cube directed a warm draft to him, drying them. He forced himself back. He felt a flash of hate for Hollon.

THE CAPTAIN strenuously objected to the marriage on the grounds that the contact was too new, but Hollon pronounced the natives of the Wood true Terratypes, and the professional worrier was silenced.

There was no opposition from the natives, but the people who said farewell to Gloria pressed her hand and turned their faces away as if she were newly dead. The population of Algonquin stood with bowed heads, weeping quietly. Gloria behaved as though she were facing some great trial with courage and determination.

There was a party on the *Aetna A8* during the trip back to the star ship. Gloria smiled and laughed with tragic eyes.

"I don't blame you for not wanting to leave a home like the Wood," Tob said, "but you'll be happy when grow used to the *Aetna*. Please be happy."

"But I am happy," she replied, smiling, her eyes fixed on him, dark and quiet.

IN HIS NEW quarters in the *Aetna*, she stayed close to Tob. He composed the long report which fused all the recordings into a coherent whole, and she sat silent beside him, not moving. Whenever he looked at her, the still sadness of her face broke his heart again.

"Are you happy?"

"Yes, darling, I'm happy." The false smile came.

"Why don't you visit Hollon's wife?"

"I'm happier here with you."

Tob turned back to his report, knowing that the smile would switch off when his back was turned. His anxiety seemed to increase her distress.

She complained of headaches, caused by the humming of the machines, housed in the walls, which fed them and kept them clean. He believed that this would pass with custom, as her grief over her hair had passed. In the white light of *Aetna*, Gloria's hair was merely blonde. The red tint was left behind with the orange star. She wept, dried her tears, and forgot it. She would become unconscious of the machines in time.

Three months after they left the Wood, *Aetna A8* took Tob planetside again. Gloria promised to be happy, and to practice the newer language with Hollon's wife and the other neighbors.

Guilt washed over Tob, engulfing the rest couch. He had been glad to leave her. The strain of her misery depressed him. He had hoped she would adjust better alone. Present, bad—absent, worse, his brain repeated over and over to the rocking, until the sensitive couch disturbed the beat. He remembered his first coming home.

THE THREE rooms of the quarters were dark and still.

"Gloria," he called out, alarmed.

"Tob, oh, Tob," he heard her answer.

The lights switched on, the whirring of electric motors ground away the silence. Gloria came running out of the bedroom, her eyes full of joy.

"Why dark?" he asked.

"The murmuring hurts my head," she said. She looked pale, and thinner. "And I get tired of seeing so clearly." Her eyes faded.

"You haven't used current speech since I left," Tob accused, his anxiety and disappointment turning to anger. "You haven't even seen Hollon's wife. You've been lonely."

Gloria shook her head. "Alone some. Not lonely.

Waiting. Haven't forgotten new talk."

Tob brushed past her, into the bedroom. "You promised you'd mingle," he said, mixing their speeches. "You've been acting like a stubborn child." He stopped short.

THERE WERE two candles on the floor, their wicks smoking. A clay pot held a bubbling stew over the ornamental fire. A broom leaned against the wall.

Tob was furious. "Look at this filthy playground."

Gloria began to cry, her hands over her face. "I kept it as clean as I could."

"Why should you keep it clean at all?" he shouted. "What are machines for?"

"They hurt me," she screamed. "They hurt me! You hurt me! Stop! Stop!" She screamed repeatedly, as loudly as she could, sheltering behind her own noise.

Tob, frightened, took her in his arms, soothing her, stroking her tense back. The screams stopped. The sobs slowed. She lifted her face.

Her eyes, swollen and red, were filled with tears.

"Sorry, Tob," she said. "Truth. Sorry to cause fear."

"I'm not afraid, darling," Tob said anxiously. "You must not be afraid either. Let's have lunch. We'll talk the old language."

"I am sorry," she said.

"Never mind," Tob smiled reassuringly. "Be happy, for me." He wagged a finger at her. "And no more tantrums."

She looked at him. The pity went out of her eyes. "I am happy, Tob," she said. She went to the eating table and punched the buttons for his favorite dishes. Her shoulders drooped, and her face was tired.

Tob sighed the last of his sobs away. The rest couch bobbed away endlessly. The worst was over. He went back again.

DURING the next flight, both of them tried to repair the damage, but could not.

She spoke abstractly to Hollon and his wife, not at all to others.

"You're not trying to adjust," Tob said coldly.

"I don't want to become in-

volved with them," she pleaded. "They are confused."

"You're selfish," Tob said. "You have no feelings."

"Please understand!"

"There's nothing to understand. You're selfish and cold," Tob said.

She screamed at him again and again. Their mutual unhappiness increased. Tob hated to see his dream die such a horrible death. The more casual relationships of Terra were better. The marriage was a mistake. Still, he loved her.

"Be happy," he begged.

"I am happy," she sighed.

"Always," he demanded.

"What is a l w a y s?" she said.

They shouted and screamed at each other.

"Go to the psychotech," he said.

"I'm afraid."

SHE WENT, finally, in spite of her timidity. It did no good. The psychotech found her a little unstable, but not dangerously so. He prescribed light tranquils, which she took without result.

"Want to go back to the Wood?"

"Never, Tob," she said fearfully. "Please, Tob, never?"

"You wouldn't be happy there?"

"Not now." The pity returned briefly to her eyes. "And you must not go there."

"I've ruined your life," he said bitterly.

She shook her head. "I did that myself."

Tob was shocked into silence.

Gloria put her hands to her head and moaned.

THEY TRIED again. Tob was as gentle as he could be. Gloria's screams stopped. She became completely yielding.

"I'll be good," she said. "Change my mo."

"Are you happy?" he asked anxiously.

"Yes, Tob."

They were both relieved when the atmos ship left again.

"You'll be good?"

"Yes. Tob."

"And happy?"

"Yes, Tob."

Her eyes hung over him the whole trip, dark and unfathomable in their misery.

There was only one last episode to remember. The most recent, and the rawest. Tob braced himself to remember it, so that he could dismiss the pain from his mind.

HE RETURNED from the *Aetna A8* exhausted, still puzzling over Gloria's hopelessness.

The psychotech met him at the hanger hatch.

"Come."

Something about the psychotech reminded him of Gloria. He realized what it was at the hatch to the psych quarters. The eyes. The psychotech's eyes were filled with Gloria's pity.

"Gloria?" he asked, inside the confercube.

"Turned off the power and light and hanged herself the night *A8* left."

Tob turned and stared at the light panel, bleeding, holding his eyes wide for the tears that would not come.

"Why?"

"Left a letter for us." The psychotech paused. "Apologized for inconvenience. Message for her home planet, another for you."

"Can I see it?" Tob asked.

THE PSYCHOTECH shook his head. "Oxydized it. Her directions. Message for me to tell you." He paused again.

"She knew what was wrong?" Tob guessed.

"Yes."

"What?" Tob ground out.

"Sensory telepath," said the psychotech sadly. "Should have guessed. But she covered it. Knew you'd take her home if you knew. Couldn't stand your pain, giving her up. Never happened to homo sapeins except on the Wood."

"That all?" Tob felt lightheaded.

The psychotech nodded.

Tob rose. "Hokay," he said. "It's said. I guess I'm tempo. I can do the rest."

"Take these." The psychotech handed him the tranquils. "Exploration Service will see that it doesn't happen again."

TOB NODDED and walked into the unreal brilliance of the companionway.

Sensory telepath. She had experienced every emotion he felt. No one knew how much she felt: her own emotions, and

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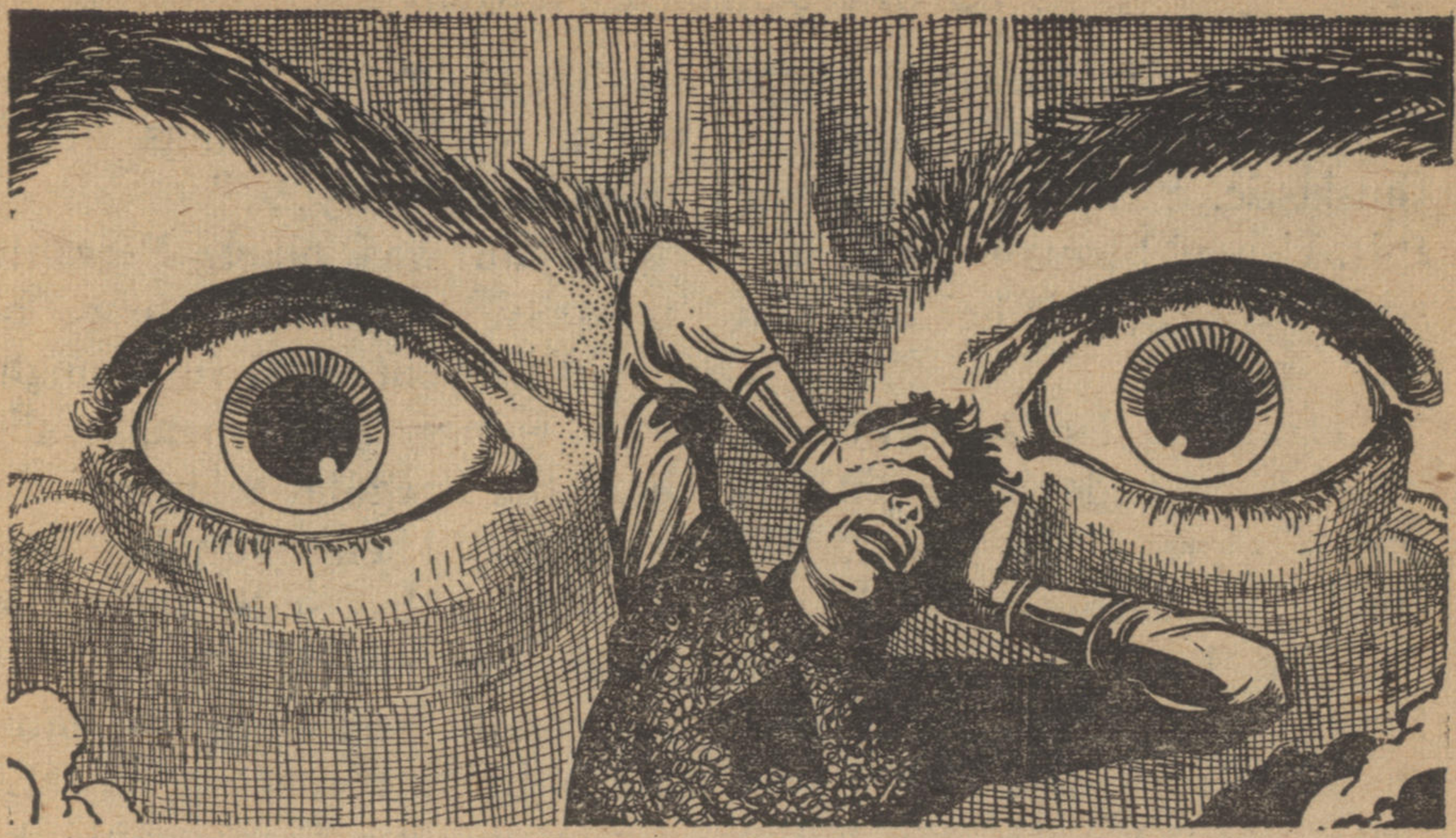


tournament,

Novelet

part one

by L. D. Hinckley

This world was a fantastic chessboard on which a game was in progress. And the Avenger and its crew were part of that game, whether they liked it or not . . .

THE RADIO was a crackling cord connecting *Avenger* and its searching helicopter.

In the spaceship, sitting before the radio bank, his body tense, Ted Perrault said a bit too quickly, "What does it look like now? Is it a city?"

In spite of metallic distor-

tion, Steve Haydn's voice was irrepressibly cheerful and enthusiastic. "Carson should see this. I should have brought him with me. Where is he? Put him on."

Perrault pulled the switch toward him, and the cabin became oppressively silent. He stared out across the pale red Martian landscape, saw three figures grouped around a dark shapeless rock on which a pale little animal lay. In their bulky suits, wearing caps with earflaps, and breathers, the three looked rather like upright elephants. Perrault smiled faintly.

He said, "Carson and the captain and Ellery are outside. Over."

"Relay!" Haydn demanded.

"It's awfully awkward," Perrault said. He added with friendly malice, "You have a camera. Too lazy to use it?"

He pushed the switch, and got Haydn in the middle of a burst of laughter. "I'm taking pictures now, but I'm pretty curious about this. I wanted to ask Carson. He'd know. This place is broken up into big plots of ground—sixty-four of them. But there aren't enough buildings to go 'round. And some of the buildings aren't even in the city..."

Haydn was quiet. Perrault, uneasily wondering how he could prevent what he thought was going to happen, could hear the irregular whine of the camera. Then Haydn said something that static took hold of and destroyed.

Perrault hesitated, not wanting to break contact. "Repeat."

"Damn it, Ted," said the radio, happily, "stop trying to intimidate me. I said I'm going to land. Over."

HAYDN HAD too much will for his own good. Perrault could see the blond man now, giving a little of his attention—not much!—to parrying the radio, and confidently going his own way.

He said, "I don't think the captain would go for that. After all, we just got here. This is our first day. We don't know what we might be up against."

"These buildings!" Haydn exclaimed. "Let me tell you about them, Ted. I'm about two hundred feet up now, I think—not sure, the gauge might be a little off—and they're right un-

der me. Pylons. Rough cut. Could almost be natural formations." He laughed. "Not quite, though. Blank-looking monsters. No windows. I think the place is deserted... Probably for a million years."

There was a new pitch to the 'copter motors. Perrault listened intently, with a sinking feeling. He glanced quickly at the three figures outside, eyes like green flames, and shook his head.

"Say something!" Haydn commanded.

Perrault activated the amplifier over the port lock. "Mister Burns. Mister Burns."

One of the elephants looked up, signalled, moved awkwardly away from the rock. Another twisted nervously at the voice sounds rolling out across the dry red ground, started after the captain, hesitated, returned to the rock, stared uncertainly toward the ship. That would be Ellery.

"I said something," Perrault said to Haydn. "To the captain."

There was no reply. There were no helicopter noises now—just the sounds Haydn made in the cabin, the unsteady whine of the camera.

THEN HAYDN said abruptly, "You're getting to be an old woman." Perrault could imagine the grin, that would follow the statement, much too clearly. "You are second in command—I think." He did not sound as if he felt any guilt; merely annoyance. "Now I ask you..." his tone picked up again "...what else could I do in the air?"

Perrault sighed. "This is a reconnaissance flight. Remember? Burns does."

Haydn laughed. "I'm down now, and I'm going to look around. I wish Carson was here."

Perrault said, "Take off again, Steve!"

Haydn did not bother to answer. Perrault heard the helicopter's hatch opening slowly, the sound scratchy and incomplete through the radio. Then Haydn said, "Hey..." in a surprised way, and there was a prolonged grinding noise that Perrault thought would never end. The radio went dead.

"Steve?" Perrault said blankly. "Steve?" Automatically, he

clicked the switch a few times. Then he checked the connections. He was going, white-faced, for the power source, when Jacob Burns came up from the airlock.

"What are you doing?"

Perrault stiffened guiltily. Burns had a certain knack for producing that. He turned to face the man. The captain was stocky, gray-haired, conscious of his authority. His tan expressionless face—still unlined—and hard body were the physical signs of a rigid discipline that had molded his personality for thirty years.

Perrault said rapidly, disliking himself for the stab of guilt, "I was in contact with Steve Haydn. He found something he thought might be a city. He wanted to land, and did so. I called you."

Burns nodded, slightly. "And?"

"The radio went dead."

CONTEMPT flared behind Burns' small eyes. "I see that I should have stayed with the ship, Mr. Perrault."

Perrault had been expecting that. "It sounded as if something was smashing the 'copter."

"I see." Burns activated the port amplifier. "Mr. Carson. Mr. Ellery. Emergency." Carson and Ellery deserted their equipment, came lumbering toward *Avenger*. Carson led. Burns watched them for a moment, turned coldly to Perrault. "Anything else?"

Perrault forced himself to meet the captain's eyes. "Just before the smash, Haydn cried out. I think he saw—whatever did it."

"I should expect that he did. Anything else?"

"No."

"Do you think Mr. Haydn is still alive?"

"...No."

There was satisfaction on Burns' face. "That's something else."

The hum of the airlock arose from the depths of the ship. There were miscellaneous human noises, as Carson and Ellery hurriedly shed their protective outer clothing. They appeared shortly, out of breath, Carson with a bland face and Ellery with a fearful one.

Burns looked them over icily. They were silent. Then he ex-

plained the situation, word for word as he got it from Perrault.

No one spoke.

Then Burns said, "If this is intelligent opposition we have no defense save a few small bombs, one remaining helicopter, and *Avenger* herself. Our warning system is automatic. We will know it if even one of those white lizards approaches us. We must see, first, what happened to Mr. Haydn and the helicopter." He paused, staring at each of them in turn. "I must remind you gentlemen once more that, for the duration of this trip, none of you are civilians. You are expected to—heed my requests. Had Mr. Haydn done so, this situation would not have arisen."

MICHAEL ELLERY made an audible swallowing sound. The chemist's pale bony face was much paler than usual. He seemed not to know where to aim his eyes. Once more Perrault thought what a pleasure a man so sensitive must be for Burns.

Henry Carson, the mathematician, said quietly, "If this is intelligent opposition—we do not know that it is—it must from its one action be inimical to us." He hesitated. "What chance do *you* think we have?"

Burns swung heavily on him. "Haven't I made that clear?"

Carson did not react: He was a tall, bald man with a jutting jaw, piercing eyes, unhealthy-looking skin. Perrault envied his composure; Burns never disturbed him very much. "You haven't made anything clear. What kind of opposition? It must be alien, of course. It couldn't very well be other Earthmen, or natives."

Burns began to turn red. Again Perrault found himself in the role of peacemaker. He said with an ease he did not feel, "Before we go any farther, shouldn't we examine the scene of the—disaster? I'd like to volunteer for that now."

Ellery found a place to focus his eyes, on Perrault. "I'd like to go, too." He stood up, almost eagerly. "I'll see about the bombs and the 'copter..."

"Sit down!" Burns snapped. Ellery blushed and stumbled to comply. "We're going too fast, gentlemen." The final word was slow in coming. "We must

decide who goes where and who does what."

"On the other hand," Carson growled, "why divide our forces? That makes it even easier for them."

Burns shook his head. "I do not feel it advisable at this time to move the ship."

"Sitting ducks," Carson muttered.

Perrault said, "I'd like to take Carson with me—Haydn asked for him."

Burns nodded, falling back on Perrault as he always did when they were alone. "Then it's settled. Mr. Ellery will remain in the ship with me." He looked steadily at Ellery, who did not meet his glance. Perrault was momentarily sorry he had not asked to have the chemist come with him. "Take care, Mr. Perrault. You and I are the only ones who can pilot her."

Perrault said shortly, "You're better than I am."

HE AND CARSON went to prepare the second helicopter for flight. They assembled it in an hour, added bombs at Carson's insistence. Then Carson went to get cameras and films, while Perrault stayed to monitor the engines. An hour and forty minutes after the final message from Haydn, they were in the air.

Carson stared tight-faced at the pale red landscape swinging past beneath them. "Why would anyone fight for this?"

"Lots of reasons," Perrault said. "Ask Ellery. In a day or two, he'll be able to tell you exactly why."

Carson was still looking down. "That wasn't *quite* what I meant." He added doubtfully, "I hope you know where we're going..."

"I do. There was a tracer on Haydn." Perrault glanced at the mathematician. He said, "I'm glad you're with me."

Carson's face was unreadable. His piercing, all-knowing eyes moved over Perrault's features. "Burns," he said distinctly, "is happy, too." There was a short silence, unbroken save for the sounds the 'copter made, beating its way through the thin dry air. "Anyway," Carson added, ugly face humorous, "I had no choice. Come with you, be killed—stay there, be killed. What's the difference?"

Perrault peered through the windscreen. "I think I see it. Left. Over there. Left...farther."

"Oh," Carson said hollowly. "Yes, there's definitely something there."

PERRAULT adjusted the controls. The helicopter swung around slowly, came over what Haydn had thought might be a city. There were twenty-some buildings, big rough monoliths looking rather like stalactites without a cave, in a cleared area of sixty-four squares. The slanting evening sun, behind the men now, caught at the buildings and threw shadows grotesque and unbelievable across the city-area. Both men stared.

Henry Carson broke the silence. "Doesn't look as if it were meant to live in. Does it?"

Perrault shook his red head, took the helicopter lower. "Could we know?" he muttered. "I don't see Haydn's 'copter."

He allowed the helicopter to sink lower still, while Carson contacted Burns, to report that they were over the city.

Now Carson was looking down again. "Those buildings are *big*. What's our altitude?"

"About two-fifty. I'll level around two hundred."

"I see the other helicopter." There was a grating sound in Carson's voice totally new to Perrault. "I see part of it, anyway."

Perrault held steady, squinted where Carson pointed. And was sickened. He saw only twisted bits of yellow, protruding from beneath the base of one of the heavy ugly buildings. The faint, unexpressed hope he felt for Haydn vanished. Now he saw what, earlier, he'd heard...the crushing... His eyes, only half-seeing, traveled automatically up the building and he imagined its cantilevered upper areas made a sneering snouted face.

HE PULLED the 'copter away sharply, almost throwing Carson to the deck. "*Under* the building!" He could no more accept that than he could the grinning pig's head. "How could it—fall on him?"

"It did fall on him." Carson

was quite controlled. "The question is *why*."

Perrault ignored him, making ready to land.

Carson pressed his shoulder warningly. "No. The same thing might happen to us."

"But..."

"Go higher. There's more here than you see."

Perrault stared. "He might still be alive!"

"He's not. Believe me, he's not."

Perrault hesitated, but the piercing eyes were not to be denied. He took the helicopter up. At five hundred feet he held steady, looked down at the city. Nothing new—nothing, apparently, of what Carson saw. A number of buildings were in a line-up on each side of the city-area but that was all. Decisively, he shook his head.

"Keep looking," Carson said grimly.

Then suddenly a trick of sunlight and shadow snapped it into focus in Perrault's imagination. "It's a—chessboard."

Carson nodded quickly. "And there's a game in progress. The building fell on him all right." The camera whined.

"I never saw a game like this before. Erratic is the word for it." Perrault thought he was offended. "Certainly not classic..."

"No," Perrault agreed drily, thinking of Steve Haydn. He opened his mouth to say more and a scalding anger rose in him, closing his throat. Then it passed, leaving him shaken, and surprised. "No," he said again, calmly.

Once more Carson pressed his shoulder, lightly this time. "You and Steve were good friends, I know... We can land, if you like. The square next. It's safe."

Perrault nodded dumbly. He brought the 'copter down savagely, as near the yellow scraps as he could manage. He did not cut the engines. Carson climbed out awkwardly. Perrault watched him plow through the sifted sand to the base of the monolith. Carson was still for a time, shoulders bowed, and then he turned away. His face was drawn and gray.

"We can't get at him now." He looked away from Perrault's eyes. "We'll have to

leave him until there's been more play."

SILENTLY, Perrault took the helicopter up and turned it back toward *Avenger*. "Some game!" He felt a surging echo of the scalding anger. "Who's playing whom?"

Carson looked gloomily at the wasteland fleeing beneath them. He was quiet so long, Perrault thought he was not going to answer. Then at length he roused himself. *"Somebody's playing us."*

Perrault wet his lips. In spite of the warmth of the suit, his skin was cold. Absurdly, he wanted very much to look behind him. "I can accept that..."

"How gracious of you."

"Sorry. I didn't mean it the way it sounded." Perrault saw *Avenger* ahead, hesitated. "I mean I think I'm flexible enough to reason from an assumption like that." He began landing procedure. "Now. Who are we playing? How powerful are they?" It took his mind off Haydn. "And..."

"And," Carson broke in quietly, "will Burns accept it?"

II

BURNS WOULD not, at least without a struggle, and many reservations. "How do you know it's true?"

They all were in the control cabin. The soft artificial lighting made their faces look healthy, cheerful, relaxed. It was night. The shields of the ports were pulled back, exposing the fierce fires of the suns in the sky, the savage black configurations of the alien planet beneath them.

"How do you know it's true?" Burns had thrown up that defense often today.

Carson was still quite composed, in spite of every jeer Burns could make at him. "Have you something better to offer?" His voice was patient. "You've seen the films I took."

"Why couldn't you get Haydn's films?" Burns asked, petulantly. That, too, was becoming familiar; he kept returning to it, Perrault thought, as if it were the answer to all their difficulties. "I particularly wanted those films. I told you that when you got the second camera."

Carson sighed. "You saw

how the player had come down on the helicopter. It isn't muscle force that moves *that*. Now I ask you again—have you another idea?"

Burns stared stubbornly at the table.

"It wasn't an accident?" Ellery offered diffidently. "That Steve just happened to pick that square?"

Burns had an opening. Beneath the flattering light, it was apparent his face was whitening rapidly.

"I think it was an accident," Perrault said smoothly, and quickly. "The game must have called for a player to go to that square at that time. If Steve had chosen another square..."

"If Steve had chosen!" Carson snorted. "They play us. They have no feeling for us."

No one spoke. Burns looked out at the brilliant sky. Perrault, watching him, was conscious that they all waited, tensely, for the alarms to scream.

Ellery screwed up his courage. "We have bombs..."

BURNS TURNED on him, almost in relief it seemed. Carson tried to stop him, then changed his mind.

Burns glared at Ellery. "Tell me, sir. What can we use them against? Do you know? Do you see something?... Do you have intuition?"

Ellery tried to hold his ground—something he'd never done. "I only meant..." Then the spunk burned out. "Well, do we just *sit* here?"

"No," Perrault said, "we can't just sit here. We have to see who we're up against. And why. I have a feeling..." he glanced sidewise at Burns "...our bombs are useless as match sticks."

"We could go home!" Ellery burst out.

Dead silence. He blushed furiously, stared at his feet.

"Why this particular set-up?" Perrault was persistent. "Have we a war-culture? Is that what our—alien opposition—thinks of us?"

Burns shook his head numbly.

Carson stood up, unnecessarily awkward, noisy. The other three looked at him questioningly. He stared down at them, as at students in a classroom. "Chess, gentlemen, is not

a war game only. In a larger sense it is a *behavior* game. If you want to put it that way. Our opposition has studied us, quite thoroughly..."

They waited.

Carson said dryly, "Your silent agreement encourages me," inspecting each face in turn. "It makes me reckless enough to complete my statement. I therefore say this: our opposition knows what makes us tick, much better than we ourselves do. It knows what bait we most prefer. So—we must play the game to earn our right, such as it is, to participate in extra-Earth affairs...

"Comment?" Carson took a deep breath.

"Mr. Carson," Burns said heavily, "I think you're crazy."

CARSON sat down. "A not unnatural assumption. But I don't think so. Not crazy. Not yet, anyway. Just looking on the other side of the thing. The black side, of course."

"I don't like puzzles." Burns' voice was flat. "Or games."

Perrault watched him closely. "If we assume Carson is correct—or partially correct—then we must play the game, to get into more or greater contact with the opposition. The aliens." He added, "This is of course if it—they—are not inimical."

Ellery twisted self-consciously.

Burns stared at him.

Ellery wet his lips and said, "What if we lose?"

Burns made an effort to gain control of the situation, as Perrault expected he would, by reducing it to his reliable military formula. "Fortunately the decision, if so it can be called, is not up to us." His voice was clipped with relief. "I shall attempt to contact Earth for orders. I shall tell them that—we have engaged the enemy..."

His voice died out hollowly against the bulkheads. Carson looked at him in sheer disbelief. It must have sounded miserable to Burns as well, because for a few seconds he was unable to meet anyone's eyes.

Ellery could not resist taking the opportunity. "They would think we were crazy."

Burns glared, but before he could retort, Carson said dispassionately, "Does it really

matter what we do? We are nothing to them..." he spread his hands, helplessly "...a momentary diversion."

"I don't like that," Perrault said. "You say the board is out there for a purpose. I agree. Then you say we're nothing to them. Why should they bother with so elaborate a set-up, then? The game is chess. We know the rules. We are supposed to play..."

Carson snapped, "What do we do with rats? And dogs and guinea pigs?"

"What they do with Haydns?"

There was a silence.

"If we're supposed to play the game..." Ellery's voice cracked on the verb "...how do we move the players?"

Perrault turned toward him. "I imagine that will be...taken care of for us."

CARSON adjusted the picture screen and turned on the camera. The light-level in the control cabin fell, and the table-top became a view of the chessboard from the air. Shadows made the players bulk out like creatures in a nightmare.

"It will be seen," Carson said precisely, "that one side is losing." He touched the camera, and the players stood out in two distinct shades of red. The piece that fell on Haydn was one of the paler ones. Carson said, "White destroyed Haydn. And white is losing."

Ellery said slowly, "If that's us—then our own actions killed Haydn?" He did not sound as if he believed it.

"Yes," Perrault muttered.

Burns stirred restlessly. "This is all very well, gentlemen," he said, and Perrault thought now that his nose was rubbed in it, he was willing to accept the game. "This is all very well. But how shall I phrase it for Earth?" There was a flash of triumph in his eyes. So he did *not* accept the game. "Tell me that."

Carson smiled bitterly.

Ellery said nothing.

Perrault spoke carefully, "Is it necessary to tell Earth anything?" He waited, but could not fathom Burns' still face. And no one else seemed willing to speak. "Shouldn't we know more about the aliens, first?" Carson threw him a look that said plainly, *I won't clear the ground for you this time.* El-

lery stared miserably at the image of the board. "Now that we are committed to the game..."

Burns reacted. "But we're not committed, Mr. Perrault. We're not committed to anything, until I contact Earth."

The blind smugness angered Perrault. "We are playing," he said coldly, watching Burns' eyes widen, "whether you like it or not. I think that commits us."

Burns stood up. "Overruled," he said, smiling faintly, and went into the radio cabin. In a moment they heard his voice, cold, controlled— "Come in here. All of you."

PERRAULT saw Burns standing stiffly before the control board. The needles and lights that should have been alive, moving, were cold and dark.

Burns said, "It's dead." He shook his head blankly. "Can't do a thing with it. Perrault..."

"...Nothing," Perrault answered finally, after checking it.

Carson looked about *Avenger* pessimistically, uneasily rubbing at his big jaw. "They monitor every move we make. How amusing this little conference must have seemed to them!"

Ellery turned away, abruptly. He doubled up his bony hand and smashed it into a bulkhead.

Perrault watched Burns. "It would look," he said casually, "as if we *are* committed. I wonder if we could leave now if we wanted to."

"No," Carson said flatly. "They'd never let us leave."

Burns stared at him. "Mr. Carson. Check the films. See that they are still good."

"They are." Carson did not move.

"Check them!"

Carson sighed and walked slowly into the control cabin, while Burns watched him icily.

"Still good," Carson said.

"Mr. Perrault..."

"First thing in the morning," Perrault said easily, "I'll check the board."

Burns nodded. Perrault, rather disliking himself for it, felt relatively secure again. Carson, of course, did not care.

"Good," Burns said. He moved away toward his sleeping compartment, shoulders

slumped. Then he paused. "We need a watch." His voice was muffled. "Six hours on, eighteen off."

Carson groaned.

"We have the alarms," Perrault suggested. "And none of us are going to sleep very soundly..."

Burns did not acknowledge the suggestion. He simply began to move again, and disappeared into his sleeping compartment. *He accepts the game now,* Perrault thought.

PERRAULT hesitated, glancing at Carson and Ellery. Then he followed the captain's example.

Then Michael Ellery was standing over him, shaking him gingerly by the shoulder. The chemist's face was solemn and intent, and curiously much younger-looking than his thirty years.

Perrault stared at him fixedly, trying to wake up. It was rather like dreaming of falling down a well—and hitting bottom after all. He groaned and wagged his head, and swung his legs over the side of the bunk, and managed to sit up.

Ellery handed him a cup of coffee, and he took it gratefully. His head was clogged, even his bones ached.

Tentatively, Ellery said, "Helicopter's ready to go..."

Perrault smiled faintly. None of them wanted him to waste any time, it seemed. Even as he drank the coffee he heard someone—Carson, presumably—turning over the 'copter's engines.

He went through the ship, dressed for outside in the airlock, stepped out, saw Carson in the helicopter.

Carson waved, almost cheerfully. "Maybe this planet was meant for redheads." Then his face lengthened. "Among others."

Perrault grinned. "Maybe it was."

Carson stopped beside him, looking rather guilty. The piercing eyes were veiled. "Sorry...about last night," he said. "Didn't mean to attack you that way." Then his head snapped up. There was a mocking smile on his sallow face. "Especially when you were corroborating my thesis..."

"Skip it," Perrault said. "We were all upset." He watched Carson climb back into

Avenger, thinking what a wonder it was what a new day could do for a man. First Ellery, who looked almost at peace with himself. Now Carson, who acted almost like a human being. He took the 'copter up into the clear morning light, turning it toward the board.

III

THERE WAS no hurry in him this morning. He flew leisurely, watching the pale, rough ground slide by. The landscape was softened and somehow bewitched now in the wine-colored light. There was a curious, attractive familiarity to it... Perrault frowned.

Then he had it. This was a remembered morning. A bacon and fried fish and strong black coffee morning. A hunting trip morning...

The way he saw the planet now, the mood he was in—that was what this first expedition expected of Mars. Not the unpleasant reality of the chessboard, and other intelligent beings. Not the spinelessness of Ellery, the martinet-behavior of Burns...the fawning and conniving of Perrault... But so it was. Not bewitched, not new, not different. They might as well have stayed at home, if they'd carried all their difficulties with them—and even encountered others, to magnify them.

Perrault snorted, conscious derision, and jerked himself sharply away from that kind of thought; he was thinking like Carson now. In the distance he could see the chessboard. Even it this morning, if he could recapture the early magic, weave memories and strong new expectations about himself securely enough, would provide a challenge and not a threat.

He held the helicopter over the board, and lowered it, and saw that no player occupied Haydn's square now. He turned with shaking hands to the radio.

"How does it look?" the radio asked, in a metallic misrepresentation of Henry Carson's voice.

Perrault explained quickly. For Burns' benefit he added, "I'm running the camera all over it now."

"Safe to land?"

"I think so." Perrault fell silent, studying the board. "Yes. *If* these are regular chess plays."

"They are," Carson said. Then he laughed. "They must be."

"...Then I think I'll land."

Perrault could hear Carson muttering, probably to Ellery. Then the mathematician's voice came in strong again— "I'd better check with Burns, Ted, before you do that."

FROM HIS high place, Perrault could see pieces of the smashed helicopter. He could see, also, brownish blotches on the yellow. "Is that necessary?"

There was a silence—apparently while Carson debated with himself. Fair play won. "I think so," the radio said. "Wait a minute, he'll be right here... No. He says."

"Good Lord!" The words were torn out of Perrault.

Then Burns' voice: "I heard that, Mr. Perrault. I forbid you to land."

"But..."

"No argument." Burns, too, felt better this morning. "I am still in charge of this expedition. I refuse to risk our helicopter, without adequate covering force."

"Haydn's body— The films..."

"Mr. Perrault. *If you please.*"

Perrault swore, viciously switched off the radio. Angrily, he swung the 'copter away, back toward *Avenger*, and as he did so a motion from the board caught in the corner of his eye. He twisted quickly...

And saw a play take place.

Perrault could feel sweat breaking out all over him. He forced himself to look straight up, into the deep sky. The expected blow was not forthcoming. He saw nothing. He felt like a mosquito, with the swatter coming down. He fought rising panic, held the helicopter steady, while his eyes searched the pale ground. Nothing. Nothing anywhere.

Then he started back toward *Avenger*, hoping the camera, set on automatic, had caught the play. And he switched on the radio, told Carson what he'd seen.

Carson must have informed

the captain, because Burns met him at the airlock. He opened his mouth to speak.

Perrault, shedding his outer clothing, spoke first. "Your decision cost us a player," he said flatly.

Burns hesitated, looked at him coldly. "You can't know that," he said, "until we run the film."

"I don't have to run the film to know that." Perrault found he could be as positive as Carson ever was. He took pleasure in the knowledge. He decided he was through with indirection as a science. He added, "I know it now."

Burns snorted rudely. But he had no answer.

THEY WENT at once to the control cabin. The captain shielded the ports, and Carson carefully adjusted the camera over the map table. Perrault waited uneasily, unsure of himself again. Carson worked with the light, to bring the players out in different colors for human eyes, and it became apparent that white had lost the player.

Ellery's breath whistled in his throat.

Carson watched the captain, not the board.

Perrault watched the play again. It looked worse somehow, this time, reduced on the map table.

Finally Carson muttered, "This is a crazy game. The moves are right, but amateurs are making them. Amateur's game. Dangerous. At this rate, white will be out of it in short order."

Perrault watched the players moving, as the scene ran again. The players moving... and nothing moving them...

"And we," said Ellery with awkward malice, barely glancing at Burns, "are white..."

But Burns said nothing. Face expressionless, smooth, he appeared to be absorbed in the board. Perrault could imagine him s e a r c h i n g frantically through the well-arranged library of his mind for remembered books on procedure, hunting out a plan of operation to cover *this*. Still he did not speak.

Perrault s i g h e d. "Even though we are committed to this game, I don't think we all need to spend all our time on it." He paused, for Burns' re-

action; force of habit. But the captain might not have heard, for his inattention. "Our purpose here is to gather what information we can about Mars, in the short time that we will be able to stay here. Since after all the aliens do constitute information, of a sort, I suggest one of us be assigned to keep track of plays and relative strength, while the others get at our first objective.

"Carson," Perrault added, glancing at the man, "is the chess expert here."

Carson inclined his head. "Thank you. And the same to you." Then the dry smile left his face. "But you're projecting a long-range plan. The game won't last that long."

BURNS ROUSED himself. He shook his head slowly, then decisively. He'd come, or been dragged, a long way since *Avenger* put down on Mars. But not, Perrault thought, far enough. "No, gentlemen. Information is our first goal, true. But now all such goals must be put aside until the enemy shows himself. We must make him show himself." He looked confidently at each of them in turn. They all, even Ellery, stared back at him curiously. He seemed shaken by the lack of effect. He took a deep breath. "Haydn," he began in a strong voice, "does not seem to have made you realize this is a question of our lives..." He stopped.

Ellery said, quite distinctly, "For Lord's sake, dry up."

"That's all very well," Carson pointed out very quickly, in a thin tight voice. "But we..." he included Michael Ellery in his sweeping glance "...all want to do one thing, while you are willing to do nothing. You want to sit here. You are holding us back. And as I think Perrault showed us this morning, dissension will lose the game for us."

Ellery cleared his throat loudly. "What happens when we lose?"

Perrault said, "Shall we sit here and do nothing? No moves at all? Everybody out to lunch? Will the game stall, or will we continue to lose? We're not doing much now, and we are losing."

"And Earth," said Carson in a soft and persuasive tone, "is literally thirsting for informa-

tion, while we have enough here to drown them!"

"Dammit!" Burns smashed his fist down on the map table. His hand blotted out part of the image of the board, destroying it. The others fell abruptly silent. He brought his hand up from the board, swiped it awkwardly across his eyes. "I've never run into anything like this before." His voice was low, ragged. "I'm a pilot. A soldier. Nothing else. I don't try to pretend to be anything else. This is a military expedition, and in spite of you all I'm trying to handle it in the best way I..."

He took a deep breath, and after a moment composed his face. He placed his hands on the table-edge, pressuring them to stay quiet. When he spoke again he kept the ragged note out of his voice— "All right. Mr. Perrault. You have my permission to get Steve Haydn's body. And the films he took, although I don't think they will provide us with anything new now. *If* the board is safe..."

Perrault felt a twinge of guilt. He nodded briefly and would not meet the captain's eyes.

"Mr. Carson."

"Sir?"

"You will accompany Mr. Perrault..."

READYING the helicopter for flight once more, with Carson working silently beside him, Perrault mulled over the scene in the control cabin. It seemed to him, now that the fireworks were over and he could look at it with some objectivity, that there was a peculiar sense of ethics—inverted, to be sure—to the game. The chess game, not the Burns game. Arguing among themselves, it appeared, weakened their position. And if they lost...? His mind slid away from that. But how to win against an unknown opponent when they did not know what constituted a positive play...? Carson stated the point of the game. And Ellery drew the obvious conclusion...

What if we lose?

"Ready?" Carson asked.

Perrault nodded, gunned the engine. *Avenger* sank slowly beneath them, as if the endless red desert were methodically

absorbing it. "Well, what do you think?"

Carson looked sardonic. His face was closed. "Well, I think we're a pretty mismatched bunch."

Perrault grinned. "Aren't we, though... It's strange, the way these trips work out. This one, I mean, not so much the Moon trips." He turned toward Carson, earnestly. "We have the people who are qualified to go; those who are physically able to go; people who can go—and finally the ones who are *willing* to go."

Carson shrugged. "Everybody's searching for something." His head in profile against the bright sky made Perrault think of an eagle. "Except the place to search is *in*, not out. I think I see the nemesis ahead of us now."

They were silent, expectant, while Perrault brought the helicopter around, held it over the board. The pieces stood out very clearly in the thin cruel sunlight.

PERRAULT looked down, satisfying himself that what was left of Haydn's 'copter was in the clear. Then he studied the rest of the board, green eyes intent. "Changed again," he muttered. "We must've made another move, this morning."

Carson said, "What a memory you have." Perrault could not tell how he meant that. After a time, Carson pointed at the board. "Look. Our pawn—that is us, I hope—will get their bishop. Strange game. But at least we can check our... progress with...the others..."

Perrault said, "I wonder if our conference this morning—I wonder if this reflects it?"

Carson glanced at him, the piercing eyes unreadable. "Good point. You mean if we work together we can win the game?"

Perrault smiled, without humor. "I don't know if I meant exactly that, or not." The smile stretched. "Can we?"

Carson regarded him coolly. "I asked you," he said, "since you seem to be directing this show." He hesitated. "I figured you for a comer, Ted, but I think you're getting pretty obvious."

Perrault could feel his face growing hot. "Not a comer." He kept his voice matter-of-fact. "A stayer. I've gone about

as far as I can go." He brought his square hands down in an abrupt slicing motion. "I face a future of getting around people like Burns. I've faced it for a long time. The thing now is to make that as safe, as easy as possible—and still live with myself.

"I don't think I'm going to be able to do it."

Carson looked away. "Safe to land," he said shortly. "No matter what happens, nothing can touch Haydn's square. Another player..."

Silently, much more rapidly than necessary, Perrault brought the helicopter down. The landing jar hurt his teeth. He was afraid to get out and look at the blades. "You asked me."

Carson grinned. "So I did. What's the matter? The truth always hurts."

"Especially when you first face it, eh?" Perrault decided not to cut the engines. He slid out of the 'copter. "You see only one side of things. Your side. I have always hated men like Burns. I've detested that type all my life. I always will."

THE SURFACE was fine sand, here in this particular area. Perrault had noticed, coming down, that it was pebbles in the next. They marched uneasily across the sand, toward the bits and pieces of Haydn's helicopter.

"Match sticks." Carson growled. "Kindling." He stopped moving. "Sure you want to come?"

Perrault walked past him, stolidly. And then he saw a silver twinking about the pieces of yellow. A hollow certainty yawned in the pit of his stomach. He broke into a frantic, awkward run.

The pale little animals, twins of the one he saw on the rock yesterday, were without fear. They did not move away at his approach. They continued to gnaw. He ran in among them, yelling, stamping and kicking with his booted feet. Pale animals, and polished bones, and a split and empty skull, were scattered wildly across the fine, strained sand...

Awareness returned. In sections. Slowly.

Someone cursed in a flat, hopeless voice.

There was a fearful pressure on his arm.

He was slippery with freezing sweat.

He was staring—not blindly now as he related the perceptions to himself, and Henry Carson—through the helicopter's windshield.

Carson said, "You sit. I'll fly."

"...You don't know how."

"I can get by."

"Damn you."

CARSON gave way without another word, and Perrault took the machine up. His muscles, his hands and feet, all seemed to know what to do. The process of flying the 'copter was automatic. He was surprised, and thought everything was happening too fast. He wanted to call a halt, until he had a chance to catch up. He willed the helicopter to stop flying. It did not. He felt dizzy, gave up, closed his eyes.

Finally he began to feel better, began to feel that he was catching up with time. He looked at Carson.

Carson met his eyes. "I expected this. Something like this. I didn't want to mention it." He sighed, deeply. "As you say, I see the black half of everything..."

Perrault turned his head. "Laughing at us. Moving pieces around." Then the helicopter bucked angrily. "I'd like to blast them all to hell!"

Carson twisted quickly, to check the camera, to watch the board. Then he became perfectly still. "Our king's in check," he said. "I didn't see that coming." His voice was apologetic. "I hope the camera caught the play."

Perrault ignored him, the way they all ignored Ellery.

"It won't be long now." The mathematician's voice was very soft, as if he had no pressure to put back of it. He reached for the radio controls.

There was no more talk, save Carson to the radio, until the helicopter landed beside *Avenger*.

IV

THE CAPTAIN came outside to meet them. "How do you feel, Ted?" He was strangely subdued. There might have been

real sympathy in his voice. That made it worse.

"I'm okay." Perrault climbed stiffly out of the 'copter. His voice was a little annoyed. "No sense in taking it out on myself, or the rest of you." He could not have said that yesterday, perhaps.

They filed silently through the airlock and up to the control cabin. The camera had got everything with pitiless clarity, from the gleaming bones to the ponderous motion of the players.

Michael Ellery caught his breath sharply. "We ought to get the bones..."

"Leave them." Perrault's voice was lifeless.

Ellery was round-eyed. "It's unChri—not decent!"

"Is this a Christian place?" Perrault added, more quietly, "Burial won't help. I'm sure the little beasts can dig."

There was a heavy silence.

"Look at the sand," Carson said finally, and then waited patiently until he had their attention. "It's indented very little, where the players have been placed at various times. I noticed that both times I was out. What power they command." His face was cold, old. "And we talk of winning..."

"We must win," Burns said, as if someone had pressed the proper button. Then his face wrinkled. "Yet we must consider losing, too, I suppose." He wrestled painfully with this new concept. "If only for whatever insight it will give us."

ELLERY could not look away from the projection of the bones on the map-table. They gleamed now, scaled down to size, like tiny toothpicks. His voice was a frightened whisper: "I think we should leave."

Burns stared at him dully. Eventually he shook his head. "We can't do that." He did not sound as if he knew why.

"Why not?" Ellery was hanging onto the table-edge with both big hands. "Why do we explore, anyhow? To gather information—*to take it back.*"

Carson touched the chemist's bony shoulder gently. "I don't think we're in any personal danger. Unless we get on the board. If we lose, we probably will be quarantined to Earth, though. All of us. All men."

Burns: "A trip such as this one costs..."

"I know," Carson interrupted. A thin smile touched his mouth, and disappeared. "Irony. We can't soon afford another—and think what effect this unsuccessful one will have."

"Back to the game," Burns said. "We are not going to lose if we can help it." He shook his head doggedly, lost. "But how can we win?" His voice was child-like, petulant. "If we do nothing, we lose steadily. If we co-operate among ourselves, we just about stay even, or maybe gain a little. But now it's too late for minor gains. We are up against someone who can watch us while we talk here, and yet remain undetected. It would be impossible, considering our few resources, to locate them..."

Carson tapped the table slowly, a watchful eye on Ellery. "There are so few plays left...we can't go on for long..."

Perrault broke in roughly, "There must be a way to win. Otherwise, why the set-up to start with? Henry, when would you say the game began? When we left Earth?"

BURNS STARTED to protest, fell silent before Carson's sardonic face. "The moment," Carson said deliberately, "this project was conceived..."

Both Burns and Ellery stared at him.

"All right," Perrault said, after a moment. "Then there must be a way to win. Some way."

"How?" Burns asked, simply. His eyes regarded them all impartially, as if they were no more than clothing-store dummies.

"Leave," Ellery answered. "Would that protect our king?"

"We can't win," Carson said bitterly. "This is a diversion for them."

Perrault gestured futilely. "My mind is full of violence..."

Burns sighed.

They sat in hopeless silence in the control cabin, while night came to mark off their second day on planet Mars. At last, one by one, breaking the thick dead quiet, they got up to do the necessary things in preparation for the night.

"We'll sleep on it," Burns said, and went unsteadily to-

ward the galley. "What else can we do. . . ?"

"We can leave," Ellery said into the silence. He said it again in the morning, still answering Burns' rhetorical question. "We can go home. Where would we be if we won, anyhow? In competition with—them?"

Burns stared at him. For a moment a night's sleep and force of conditioned reflex brought out the old, unbroken self. He flamed at the chemist. "*We* are not quitters, Mr. Ellery!"

Ellery laughed insolently.

"Leave him alone," Carson said sharply. "We're starting our third day of this—strain. That's enough for any man."

Burns blinked, as if that erased the incident from his memory. "Three. A lucky number."

Carson studied him with a faint, unpleasant smile.

PERRAULT, watching from the doorway, said, "I think we'd better check the board."

"An excellent idea." Burns swung around to face him. His expression, rather to Perrault's surprise, was quite sincere. "It should be done as soon as possible every day."

"Like washing your teeth," Ellery said.

Carson's g r o w l partially drowned him out: "If there *are* any more days."

Perrault said, "I'll do it now."

He flew slowly, taking in the new day, thankful for the solitude. He had not planned to have himself become official board-checker, but he was glad it had turned out that way.

He contacted the ship. "I'm photographing the board now. Shall I land?"

Burns was on the other end this time. He hesitated, while Perrault waited patiently, and sound of static filled both cabins. Then: "Is there any need?"

"No."

"Do you want to?"

"No."

Perrault barely glanced at the board, before he turned and flew back to *Avenger*.

There was no one at the airlock to meet him. As he moved through the ship he heard voices drifting down from the control cabin. The rage in the voices lashed out toward him. He paused.

Carson came into the corridor,. took the camera from him. They stood alone. "Burns and Ellery are at it," the mathematician said. "Funny thing. Burns is backing down all over the place. That just seems to egg Ellery on, and he keeps at him. Ellery's asking for it, but he isn't getting it."

Perrault said nothing.

Carson continued, "Burns tried to contact Earth again, of course. No go. Of course." He started back along the corridor. "Come join our happy group."

Perrault followed him. He watched them all without speaking, while Carson set up the camera, a slight, sly smile on his face, and the chess board sprang out on the map table. Ellery's face was serene, calm. But his wide, round eyes glittered. He might have been a Christian martyr. Burns looked stubborn. He would not meet anyone's eyes.

CARSON said, "No matter what white does—unless black makes some very stupid moves...the game can't be kept up for more than three plays." Then everyone looked at the board. Carson demonstrated, showing them the alternate plays with a little flourish.

Ellery, challengingly: "Why can't we leave?"

Perrault felt himself tensing.

Sweat stood out on the captain's tan forehead. He seemed to be shrinking into himself. He said in a low voice, "Perhaps we'd better..."

Carson said persuasively, "Resign from the game."

"We can't leave until the game is over." They looked at Perrault, as if he were the aliens speaking. They withdrew from him. He added quietly, "The ship is dead. Try it..."

Burns said, "I don't suppose we need to check..."

Ellery: *"Try it!"* His voice rose, cut off abruptly.

Burns moved uncertainly toward the pilot's chair, lashed on by Ellery's demand. He sat down, uncertainty vanished, his hands moved competently across the complex maze of the instrument board.

Avenger was dead.

Carson said sharply, "Two moves."

Ellery stood up, exaggeratedly casual. Slowly, he reached down, unbolted a chair from

the deck. No one was paying much attention to him. He carried it negligently toward the instrument board—and Perrault suddenly realized what the chemist intended.

HE YELLED. He shot out of his chair and across the cabin, and caught Michael Ellery around the knees. The chemist staggered. A ragged sob came from his throat. He swung the chair down, viciously. It smashed against the deck plates, next to Perrault's head, with a muffled, deadly sound. Instinctively, Perrault dodged. Ellery aimed a kick with his booted right foot. Perrault caught it on his right temple, he felt the skin tear. He cried out, released his hold on Ellery, rolled across the deck.

Carson tripped over him, fell forward, long arms outstretched. One grasping hand caught at the chemist's bony shoulder, turning him slightly.

Burns, waiting coolly for an opening, stepped up behind Ellery, brought his hands down edgewise against the chemist's neck. There was a perceptible cracking sound. Burns stepped back, unhurried.

Ellery sighed, and collapsed.

Perrault and Carson climbed stiffly to their feet, looked at Ellery, sprawled out on the floor.

Burns raised his head, checked his eyes, felt along the collarbone. "Thought I might have broken something... No." His voice became stronger. "We'll have to put him in his bunk. No other place for him. Get a hypo."

Perrault, rubbing his head gingerly, touching his temple lightly, nodded shortly and went to get the necessary equipment. He bandaged himself, before he returned. He gave Ellery a shot where he lay; Burns and Carson picked him up, carried him to his bunk, threw him into it. Then they strapped him down. Perrault looked down at him. The chemist's face was dead white, his long lashes stood out like ink marks against the skin. The features were...at peace.

"Well...?" Burns asked wearily.

Perrault looked away from Ellery. "Good for twelve hours."

Carson grunted. "I suppose that constitutes a move."

Burns glanced at him, shrugged. "One more left, then? Or a move in our favor? What do you think, Perrault?"

Before Perrault could answer, Carson broke in: "Why don't we get it over?"

"Oh, Lord!" Burns turned on his heel. "You, too?"

Carson grinned unpleasantly. "Looking on the dark side. As usual. It's all dark side, now."

Perrault said, "We've got to get in touch with *them*. In some fashion besides the board."

Carson: "Same old song."

"Look." Perrault was intent. "We agreed these aliens have studied us, know how we react. I don't think they're just... amusing themselves. They can't do things like—Haydn—to us, without there being a way for us to beat them."

AS HE SPOKE, the captain was walking back toward the control cabin. The other two followed him. Burns tried to straighten the bent leg of the chair Ellery had unfastened, then bolted it to the deck again. The seat slewed at a drunken angle, when Burns was through.

Carson appeared to pay more attention to what the captain was doing than to what Perrault was saying. "I wonder how he'll be. When he wakes up."

Burns was looking at his handiwork with satisfaction. "You wonder if his mind may have snapped? The way I could have snapped his neck? We will keep him strapped down. Spoon-feed him."

Then Carson said, "Ted, why don't you give up?"

"They are trying us," Perrault persisted. "Basic training."

"Toying with us."

"On one hand," Perrault said patiently, "you say, or said, this is a complex test. Then you deny that board out there any real meaning..." He hesitated. Then: "You don't want us to win. You don't want to inflict *us* on *them!*"

Carson said nothing. His eyes were veiled.

Perrault swung on Burns. "Land *Avenger* on the board!"

The captain drew back as if he'd been threatened.

"It will start, for that," Perrault said. "I'd bet my life on it."

Carson said, "You bet nothing."

Burns began, "Now wait a minute..."

And Perrault interrupted him: "We have no more than three plays. That's not counting Ellery. Maybe we've got less—even just one. We have to force this thing, some way."

Burns' face was blank.

"It's not just our lives," Perrault continued, persuasively. "It's man's future, in space."

BURNS HESITATED. "One of the players could crush *Avenger*..." He was coming around.

"But it won't." Perrault was positive.

Then Burns shook his head. "It will...have to be something else."

"But..."

"You can't ask me to do that."

"If you refuse, that may be a move. Remember that. Would you believe me, would you do it, if I went to check the board, and told you there was just one move left?"

Burns looked away. "You will have the camera..."

There was a silence.

"All right," Perrault said finally.

He went to the airlock, donned the necessary equipment, began to ready the helicopter. Carson offered to accompany him. The offer was summarily rejected. Perrault flew slowly to the board, not allowing himself to think much about what he was going to do. He studied the board carefully, then turned on the radio.

He said, "One move."

There was the static-filled silence. Perrault was directly over the board now. He began to raise the 'copter rapidly.

"Okay," Burns said. "Come on back."

PERRAULT put the controls on automatic, slid out of his seat. He left the radio on, wondering what Burns was thinking. *Like Haydn and me,* he thought wryly. He knelt over the deck plates.

"Perrault?" Burns' voice was nervous. "What are you doing?"

"I'm going to destroy the board," Perrault said cheerfully. "I'm going to bomb it," he added.

Burns: "Don't do it. Hear? That's an *order!*"

The bomb slid easily through the hatch. Perrault blessed Carson's early insistence that bombs be part of the 'copter's equipment. There was a faint puff, a small black parachute blossomed above the shiny metal ball. Perrault took the helicopter's controls again, and drew away rapidly. The last he could see, the black parachute was draped over a player like a shawl—black's bishop, he thought. The bomb itself dangled like a locket.

"Perrault!" the radio screamed.

Then there was heat. And a shock wave. The 'copter spun like a piece of paper in the wind. Perrault fought to control it.

Then there was quiet. Perrault sighed, completely relaxed. The helicopter was far off course, much too high. Far to the right, there was a gleam that must be *Avenger*. Perrault swung the 'copter toward it. He did not look back.

He heard muffled shouting through the radio, then Burns' voice: "The radio works! We can try to call Earth! Perrault! Did you hear?"

End of round one, Perrault thought. *What are they like?*

"Perrault! Did you hear what I said?"

"We didn't have to take that," he muttered. "Why didn't we think of it sooner?"

"What? I can't hear you...?"

"Nobody," Perrault said thickly, "would be expected to take that. If they had any guts."

Yes, there were lines outside the store in the mornings — but the lines weren't quite as long as they'd been last year . . .

the trouble with toys

by Kate Wilhelm

SOMEWHERE in the city, a four-year-old boy was busily playing with his new cowboy and Indian set. His face was enraptured as the tiny Indians tried again and again to swarm over the walls of the fort city. Cries of terror and fear mingled with angry shouts and curses and war whoops as the battle was fought. Arrows punctuated the sounds with their *twang-plop*, answered by the *ping-ping* of gunfire. As cowboys fell, they were dragged or carried away until the Indians were finally repulsed again. Then they

Children had dreamed of toys like these for ages — and here they were. But where and how had they been made?

miraculously regained their feet and the battle was refought, from the first scout creeping up to spy out the enemy to the last onslaught brought total destruction to the tiny red men.

Once the boy's mother started to go out on the sun porch to watch her child at play, but just then the baby awoke, so she turned once more to her duties, inside unaware of the all but inaudible cries and whining bullets. She smiled happily. For the first time in months her son had played alone long enough for her to finish her work. She decided to order some more toys for him from the catalogue.

RUPERT L. HUMPHREYS was a methodical man. He was a precise man, and an acute business man. He was the undisputed tops in his field. When Rupert was nine, he looked in the mirror and knew that he would never be handsome; so he decided he must be successful. When he was eleven, his elected goal was the career of a salesman—the best, naturally. But, on learning that buyers make more money, and have more influence and prestige than salesmen, he made up his mind to become a buyer. At seventeen, he laid out his plans to be head buyer of toys in the world's leading department store. He had pondered the problem long and thoroughly before deciding on the toy part. But he surmised that as long as people had children, they would provide play things for them, thin times notwithstanding. And Rupert was never wrong.

Unscrupulous was a word often used to describe him; uncanny, another; besides many others more or less unflattering, although true. He would have said, had he been asked, that his success lay in the fact that he looked into matters himself, made the best deal available with the material at hand, and saw to it that his salespeople sold what he bought. It was more than that, however; he studied child psychology, and then forgot what he had learned when he found out that parents bought what they thought *they* would have liked as children. So, when other stores featured stuffed

toys, he brought out educational games on the theory that every mother knows her child is brighter than he appears, and is going to prove it one way or another. And, since Rupert was never wrong, he always had just the correct thing for every occasion.

He haunted the toy factories, on the lookout for anything new or novel that would appeal to parents. He made countless trips to Europe and Japan to bring back the best for his import department. He knew and was known personally by every major toy maker on three continents. When he said it would go, it did. And if Rupert L. Humphreys frowned on a toy, it was discontinued immediately; he was never wrong.

THANKSGIVING was past, finally, and the full Christmas rush was on. From his glass-partitioned office, Rupert watched the frantic scurrying below in the toys. Customers were pushing and being pushed as they tried to get the attention of the salesgirls. A child had the fire engine replica off the stand, and was trying to make it go. Another was obviously going to begin painting the showcase that shielded the dolls from snatching grimy hands, if someone didn't see and recapture the tube of paint he had filched from a shelf. Rupert smiled frostily as he watched an angelic-looking six-year-old suddenly try to snatch off Santa's whiskers. They were real; Rupert couldn't abide cheap imitations.

No one could ever have known from observing him, but Rupert L. Humphreys was happy. His thin lips resumed their customary tight line, and the accordian pleats settled on his forehead and around his nose as he heard in his mind the cash registers ringing their merry Christmas songs through the soundproofed walls of glass of his office.

When the section manager approached him nervously, he deepened the lines in his face even more. Another petty problem to be laid at his feet.

"Yes, what is it, Miss Tyson?" He had purposely cultivated the gruffness of his voice in order to keep order more easily among his sales people.

"I was wondering if you had seen a catalogue that so many of our regular customers are referring to." Miss Tyson would have been executive material under anyone other than Rupert; as it was, she was always finding herself apologizing to him.

"Catalogue? What catalogue? You should know that we don't deal with catalogues." He made it sound like a dirty word, and was pleased to see her blush.

"Oh, I know," She hastened to explain. "But Mrs. Comstock and Mrs. Brill and two or three others have had catalogues delivered to their homes and they are looking for similar items in the stores."

RUPERT sighed and shook his head slowly. "I thought I told you to explain, if that question ever arose, that merchandise found in catalogues is seldom reliable. It is never up to the standard of the items we display. And furthermore, all too often it is not even described accurately and honestly. I'm sure, Miss Tyson," he continued ominously, "that if you endeavored to remember what I tell you, these little crises would not arise so consistently."

Miss Tyson hesitated by the door a moment. "Yes, sir. I tried to tell them those things, but they said that they would try some of the things, anyway. They were such wonderful toys that they couldn't resist them." She bobbed her head and backed out of the office hurriedly.

Rupert s t r o k e d his chin thoughtfully. Comstock and Brill were important customers, and it wouldn't pay to antagonize them. Still, he refused to compete with the shoddy merchandise that went with catalogues. He was still mulling it over when he saw Stan Whitlow threading his way through the crowd.

Stan was the buyer for a large sporting goods store; he was o b v i o u s l y looking for something as he peered over the heads of the women shoppers. After a few minutes of this he looked up to see Rupert watching him. He grinned gleefully and wormed his way to the stairs that led to the glass cage.

"Rupert, old man, someone's

stolen the march on you. Me too, I'll admit—but with me it happens all the time." He chuckled at the icy look on Rupert's face, and then began to roar with laughter when he unwrapped the package he was carrying. "This is an automatic car. The exact words in the catalogue. *Automatic car*. And boy, is it!"

RUPERT was interested, in spite of himself. After all, toys were his life; and whenever a competitor had something so good that he rushed over to show his business enemies, it must be unique. Finally Stan had the car unwrapped, and set it down on the desk. It was red, and chrome from all appearances, and seeing it, Rupert breathed a sigh of relief. It would be in the very high-buying bracket, therefore the amount of sales would be limited.

Watching him, and correctly interpreting the meaning of the sigh, Stan again began to laugh. Wordlessly he indicated the car, and in a paroxysm of bellows managed to get out, "Dollar, sixty nine."

Curiously, Rupert picked up the car, studying it carefully. He was familiar enough with the workmanship of the various factories to be able to tell usually who made everything he saw; he couldn't with this car. On the miniature dash was an indicator with the positions *'On, Off, Fast and Slow'*. Carefully he replaced it on the desk and pushed the tiny dial to *On, Slow*.

There was a noise like a car starting. First, the starter, and then, after a moment, the motor turned over and it began to go. The almost inaudible change of tone that would accompany a gear shift was the next sound followed by the smooth hum of a perfect engine. Miniature, but identifiable. He was fascinated by it, and for the time being forgot about Stan, who had grown very still.

When the little automobile reached the edge of the desk, Humphreys started to lift it to turn it around. Stan laid a restraining hand on his arm and motioned him to wait. The car reached the edge; there was the sound of brakes screaming as it stopped abruptly. Again the gears shifted as it backed

up enough to turn left and continue along the edge of the desk.

THEY PUT it through its paces, an intent man on either side of the desk. They laid out obstacles which it threaded without once grazing its sleek side. They slammed down books before it, and always it halted with the screech of wheels. Stan put his hand down in its path, and it blew its horn before stopping. Finally they were finished. The store had long been empty, but they hadn't noticed the exodus. Rupert was shaking his head thoughtfully as he examined the body of the toy more intently. He was looking for a crack where the bottom fastened to the top. There was none.

"Can you take it apart?" He handed it to Stan, who shrugged.

"I guess I could with a hammer or a chisel, or something like that. And I'm afraid that my sister and her son would use the same tools on me if I attempted it." He looked at Rupert shrewdly, "Don't you really know whose it is?"

"Fifteen years ago, Yokama might have thought of something like it, but he couldn't make it then or now. And he's the best there is."

"That's what I thought. Sis got it from some sort of catalogue last week and Sunday—when I was there for Stevie's birthday—she brought it out. They wouldn't let it out of their sight until now."

There was a long silence as they thought about who might have made the toy. Then Rupert asked, "Would your sister mind if I borrowed the catalogue for an hour or so?"

"My idea, too—but I think she said it disappeared into thin air. They placed another order Monday. Yesterday morning, they coudn't find the darn book. They have searched everywhere for it, she says, but it's gone." He grinned ruefully, "Stevie is sure it vanished in a puff of smoke, because only two orders of one toy each was the limit set."

"Sucker bait. Order two at such reasonable prices and then get hooked."

"I thought so, too, but how are they supposed to re-order?

They don't have the address or anything."

"They'll probably receive another catalogue shortly with the new prices."

"Maybe so, but that doesn't help right now." Stan picked up the car once more, and, shrugging slightly, began to wrap it again. "Well, if I do get hold of a catalogue, I'll let you know."

Rupert watched him silently as he finished with the car. They left the quiet store together and, before parting on the street below, agreed to let one another know if anything new came up in connection with the mysterious toy.

RUPERT spent a fruitless night trying to figure out the maker of the incredible car. After several calls that would run his telephone bill to new soaring heights, he came to the conclusion that other buyers in other cities were also being besieged with calls for toys not manufactured—or, at any rate, not sold—wholesale, so far as anyone knew. He called several manufacturers and received like information. Then, approximately three hours past his regular bedtime, he retired. For the first time in his memory, Rupert L. Humphreys, who was never wrong, was thoroughly frustrated.

The next day, he had his secretary do some figuring for him. Sales were off one-tenth of one per cent. At a time when volume should be steadily increasing until Christmas Eve, it was impossible for sales to be dropping. To be sure, this was a very slight drop, not even noticable as yet. But if every family that usually bought six Christmas toys from his store should buy two from the catalogue and four at the store, that would mean a one-third loss of business. After some more unprofitable hours with the telephone, Rupert sent out for aspirins; he had never needed aspirins before in his life.

It was late in the afternoon when Stan called. "Can you come out to Sis's? This you've got to see—the other toy arrived. It's a tractor. I can't tell you about it. You've got to see it." After giving the address excitedly, Stan added, "Boy, I think we're in real trouble.

These people will hold us up when they do decide to do business."

THE WHOLE family was outside, watching the tractor do its work, when Rupert arrived. The little, authentic-looking toy was sturdily ploughing up a strip of the hard-frozen ground. Rupert gasped in amazement. It actually was turning the ground over, to a depth of nearly an inch. There was a makeshift fence around the area made out of pencils and a ruler and several building blocks.

"We had to fence it in!" Stan explained as he saw Rupert approaching. He pointed toward the asphalt drive and running through it was a strip neatly turned over to the inch depth.

Rupert was not a mathematically-inclined man. Physics apparently had no connection with his chosen career, so had none with his education. But as he climbed into the taxi, after watching the tractor several hours, he was wondering about such things as horse power needed to drive it and turn that hard earth. And about weight and mass needed to drive that plough into the earth in the first place. He had heard about action and reaction, and he wondered why the reaction of the work didn't halt the forward action of the toy, thus stopping the reaction of turning over the earth. He wished he had brought the aspirins with him.

HE WENT straight home and, for the first time in over five years, arrived there before dinner was ready to be served. That was how he discovered the catalogue in his own home. The kids had been watching television, and had left for their rooms on his arrival. This was unusual only in the fact that they normally did it after dinner, not before. Some years ago, Rupert had decided judiciously that a successful man needed a family to exhibit as his badge of responsibility to the world. Two children was the number he thought would best serve this purpose—a boy and a girl—to show that he was truly a family man. For the most part, he had never had anything to do

with them once they had been brought forth.

Now his eyes lighted on the catalogue that his own son apparently had been hiding from him for some time. It was dog-eared, as if it had been scanned asiduously. In his eagerness to study it, he forgot about the reprimand that o r d i n a r i l y would have followed such a discovery. Rupert believed in all honesty that toys as such were a disturbing influence on children. And who was a better authority? Didn't he see every day the willful, spoiled, undisciplined products of too many toys?

He took the book to his study and locked the door carefully. Then he called a private detective agency that had done work for him before. His orders were concise. He wanted to know who issued the book, who printed it, what the best line of attack would be, and—who made the toys. Rupert wanted in, and the agency would find a way for him to wiggle in. The box number on the catalogue wasn't much to go on, but he knew his men. They would take it from there and get the information. They had ways that he couldn't use—indeed, didn't know how to use. He never inquired how they achieved their results, only knew that they did it for price. This was one time that Rupert wouldn't haggle about that.

THEN HE began the difficult task of picking out two toys to order. He had no doubt that the sender checked on the delivery address of each purchase. In every case where he had attempted to get a catalogue, he had met with failure. Somehow they mysteriously vanished after two orders had been delivered. And never more than two ever allowed, regardless of pleas or cash. Finally, just as his wife called him for dinner, he had decided on a life-sized clown and an advanced building set with a motor. He gave strict orders concerning the packages to his family, and so well were they trained that he never even considered that he wouldn't be obeyed. That night, with the book resting safely behind a steel burglar-proof door, the toys ordered, and detectives working on finding the manu-

facturer for him, Rupert L. Humphreys slept soundly, reassured about the order of things, and his own firm position in them, for the first time since mention of a mysterious competition had arisen.

Two days later the toys arrived, and the book disappeared. It was not in the safe, and since neither his wife or children had the imagination or courage to burglar his safe, he had to dismiss them as the possible culprits at once. He thought of Stan, but after a pause, he dismissed him also. He hadn't told Stan about having the catalogue. Besides it didn't really matter, anyway; he had samples and would soon have first hand information that the book might have yielded.

That night Rupert had his dinner in his study on a tray. When the head of the detective agency arrived in person to give him the details of his investigation, he had him brought there also.

GRAYSON was always contemptuous of his clients, for one reason or another; but he never turned down an investigation unless he thought he would go to jail for his activities in it. Since he had a devious mind, he could accept many that another operator might have hesitated about for a long time. So far, he hadn't gone to jail, although at times it had appeared inevitable. He never wanted to know any more about what was expected of him that was necessary to protect himself, he said. That principle was to the liking of most of his clients, not excluding Rupert L. Humphreys.

Now he read his summary in a dry monotone, "Post office box number traced to a rural free delivery address. That was given when box was rented by mail. Far as post office employees know, there's never anything in the box. They never saw anyone get the letters and orders. No manufacturing plant in vicinity of R.F.D. address. No trace of any heavy shipments out of it, or of any commercial activity for miles around. Area is in mountainous region where everyone knows everything about everybody. And no one knows about this."

He paused to glance at Rupert, shrugged, and continued.

"The toys arrive the day following the order—that is, the day following the time the orders are delivered to the P.O. Box. How they are delivered is not at the moment apparent."

At this point Rupert cut in, "What do you mean, not apparent? Are they sent through the mail, or by private delivery trucks?"

"Neither one. so far as we've been able to ascertain. Yours, for example, was found on the front step. No one saw the delivery. That's been the way it happened every instance." Again he glanced up from his notes and permitted himself a faint grin. "I'm beginning to think the guy making them doesn't want to be traced, and is using the box number as a front."

"Hmm. Could be, I guess. What about the country address—who lives there? They must know who gets the orders?"

"If they do, they aren't talking. They claim to know nothing about anything."

RUPERT paced the room for several moments in silence and then asked for the address. "I may have time to go myself. They might be willing to talk to me. I will make it well worth their while."

"Suit yourself. Personally, I don't think so. I think the old man and woman were telling the truth; I talked to them myself."

Soon the rest of their business was finished and together they watched the clown do his tricks. It was truly life-sized and *did* do tricks. The body was of a flexible plastic with gaudy red and green pants, the shirt ruffled in the traditional manner along the sleeves and neck. The painted face wore a wide grin. But there all similarity to a toy ceased. It did gymnastics, stood on its head and did cartwheels. It did magic tricks, produced a rabbit that Rupert never even tried to explain to his wife. It carried a pitcher of water balanced precariously on its head, depositing it on Rupert's desk at his command.

Rupert and Grayson laughed heartily as the clown twisted himself into a pretzel shape and then peered vacantly at them through its legs. "How

does he work?" Grayson finally asked.

"I'd give a million dollars to know that." Rupert was sober again instantly. "I've tried over a hundred commands, I guess, and he's never f a i l e d to do what I said. They couldn't all be taped."

Grayson became serious again as the clown stood expectantly waiting. "What do you mean *taped?*" he asked curiously.

"On some of the more expensive toys, there is a magnetic tape recorder. It is set to respond to some oral commands in a certain way. For instance, on a car, there might be a command taped on to turn when the word *'turn'* is said. But they are very limited and, as I said, very expensive. This thing only cost two dollars."

Grayson looked thoughtfully at the clown then. He walked around it and examined it thoroughly. He even lifted it. To his amazement, it weighed no more than a child's beach ball. He glanced around the study quickly and then said authoritatively, "Clown, bring that chair over here and sit down in it." He pointed to a heavy leather-covered arm chair. Without a moment's hesitation, and no apparent strain, the clown did as told.

RUPERT was startled. Somehow he had continued to think of the thing as a toy, until now. Softly he said, "Mr. Grayson, I think we've struck oil." Then he thought for a second and tried a new one. "Fly, clown, like a bird." They watched, slightly afraid, slightly jubilant, as the ludicrous figure swooped around the room.

"We'll go back to the mountain place together tomorrow. And we'll find out who made it. Brother! Will we find out!" Grayson brought down the clown and tried several other commands on it. It obeyed every one of them. It opened the safe; it set a fire in the waste can, which R u p e r t put out with seltzer water. It carried Grayson as effortlessly as if he had been a feather. The possibilities were limitless.

Rupert suddenly said in his cold voice. "I wonder if anyone else has thought of these toys in this way." He was thinking of the indomitable tractor that ploughed through

asphalt. And of a car that seemed capable of running forever, on nothing but air. He told Grayson about them.

"You've got s o m e t h i n g there. Some kid's dad is going to get curious about one of those things and take it apart. Whatever is in them is better than anything I've ever seen put out by the government or anybody else. I'm guessing that if ever the F.B.I. gets interested in them, we might as well say goodby to Mr. Clown."

THE NEXT morning they were parked opposite a mail box perched on a wooden post along a stone topped road. Rupert sipped coffee from his thermos and shivered, "What time does the mail carrier come by?"

"Any time now. Depends on what he has to do before making deliveries. Today being Saturday, he might be a little early. I think he also drives the school bus for this district." Grayson huddled down in his overcoat miserably.

They heard the jeep long before it came over the ridge behind them. When it stopped before the solitary box by the road, they hailed the man. "Hi, there! Can you spare a minute?"

The mail carrier viewed their approach suspiciously and nodded once briefly. "Reckon."

"We would like some information," Rupert started and at the look of hostility on the leathery face he added hastily, "You see, one of your, uh, customers is due some money and we wanted to be sure that we have the right man."

The carrier relaxed slightly and nodded again just as briefly as before.

Taking this for encouragement. Rupert went on. "This man, Roy T. Saxton, does he live around here close?"

The postman pointed up the narrow tracks that led back through the woods, "Up the trail a ways," he admitted laconically.

"Yes, but doesn't he have another place around here? Where he does his business?"

"Reckon you better ask him, Mister." The man put the jeep in gear and went jerking down the road sending a shower of stones up from the wheels.

RUPERT glared angrily at him until he was out of sight around a curve. "Helpful, wasn't he," he muttered.

"Afraid you were a revenuer, probably. These hills are full of stills. And no one talks about the business his neighbor is in." Grayson lit a cigaret and leaned against the car. "I've got an idea. You wait here for the Saxton kid to show for the mail and see if you can get him to talk. I did learn that they have a boy, and he usually gets the mail for the old folks every day. I'll circle around and get behind the cabin and see what goes on when they don't know anyone is here."

"Very well, but don't get lost. We'll meet here after I talk to the boy and meet his people." Again Rupert settled himself to wait in the cold morning air.

Grayson had been gone for about an hour when Rupert heard the whistling in the lane. Presently a tow-headed, blue-jean-clad boy of about eleven came into sight. He picked up the mail and glanced through it, all the while watching Rupert furtively.

Finally Rupert broke the silence. "Are you the Saxton boy?"

"Yes, sir."

"Good, I've been waiting for you. I'd like to talk to your father, but I don't know how to get to your house. Mind if I walk along with you?"

"No, sir."

RUPERT viewed the lad with distaste. He had this problem at home with his own son. Get kids together and they yapped until no one could get any rest, but just try to find out something and all at once they didn't know anything but, 'yes, sir' and 'no, sir!' Well, he'd got what he wanted from his son every time and he would now.

"What's your name, boy?" He let the rasp creep into his voice.

"Roy, sir."

"All right. Now, Roy, have you heard about the Secret Service?"

For the first time the boy's eyes met his. The blankness was gone for an instant. "Yes, sir!"

"Good. Well, I'm working with them. We have a report

that there is a factory in these parts, but no one will tell us anything about it. We are afraid that enemies of our country might be running it. Now, I want you to tell me all you know about it."

"Gosh, Mister. There ain't no factory around here." Again the eyes were veiled and downcast.

Rupert pulled the boy around by his faded jacket and held him close to his face. "Don't lie to me, Roy. You can go to jail for lying to a Secret Service agent. You know that?" He released the boy giving him a slight push away from him.

"I ain't lying to you, Mister. Honest." He started to run through the woods, leaving Rupert standing in the road. "Paw's house is up the path. But he don't know nothing about factories, neither." He shouted back before the bare trees enclosed his slight figure.

Rupert smiled icily, trusting that Grayson was close enough to the cabin to overhear whatever was said when the boy returned. Very leisurely he began to walk along the path through the winter stripped trees.

HE WAS MET at the door of the cabin by a pale-faced Grayson. In alarm he looked around him, but there was nothing to cause the look of fear that was in Grayson's eyes. Sternly he demanded, "What have you done? Where are they?"

Grayson shuddered and motioned him into the cabin. "Look," he pointed to the range where a pot was boiling away its contents. There was a black coal stove in the center of the room with a crackling fire going in it. On the table top lay some gooey-looking dough evidently just turned out of the bowl to be kneaded. "They were here. I saw them. She was making bread, and he was going out to feed the chickens or get eggs or something. Then they were gone."

"Grayson, pull yourself together. You're not making sense. What do you mean *gone?* Did you frighten them?" Rupert glanced irritably around the cabin, and then dismissed it.

"They never even saw me.

I was behind those pine trees out there and I could see them through the window. But, I swear that they couldn't have seen me, even if they had been looking. But they never even glanced my way. The boy left, and then after about ten minutes they just vanished. See." He touched the dough that hadn't had time to dry out yet. "I tell you, she was just starting to fix that dough. Then she was gone." His voice rose hysterically.

Rupert watched him with narrowed eyes. Grayson might be trying to pull a fast one to maneuver him out of the picture. The fright and hysteria could be an act—A good one, to be sure, but an act nevertheless. Before he could say anything else, Roy Saxton appeared in the doorway.

"I decided to tell you about the factory." Gone were his evasiveness and hesitation. "What you want to know?"

Rupert glanced triumphantly at Grayson. Whatever he had been trying was backfiring in his face. "Come in, Roy, come in. Your parents seem to have stepped out for a moment, but let's talk until they get back. Where is it?"

"What?" Exasperatingly the boy was on that theme again.

"The toy factory, boy, where is it?"

Roy Saxton's eyes gleamed in a curious way as he said in a flat, expressionless voice. "There ain't none. I thought that was what you was after all the time."

HELPLESSLY, Rupert L. Humphreys shrugged. "Well, you were right. We want to find the toy factory and the man who makes the toys. We will pay him well, and anyone who gives us information about him. Now suppose you quit playing games and tell us about it."

Roy suddenly grinned, and for some inexplicable reason Rupert felt some of the fear seep from Grayson into him.

Watching them closely Roy said, "I made the toys. Paw don't know nothing about them."

Rupert took a step toward him, as the boy laughed.

"Surprised you, didn't I? I made them and now I wished them all away. I wanted to

make money, and I thought that was a good way. So's Mom and Paw could move to the city and have a car there and things. And so's kids could have toys that would really work. I never had any that would until I learned how to wish."

His grin was impish as he looked brightly from one to the other man in the tiny room. "I wished all the toys gone and forgotten. Only I forgot to wish that you would forget them, too. I wished Mom and Paw away so's you'd not bother them no more. They don't like folks asking questions. Scares them. I don't think nobody would find out that I did it, so's now I'll have to figure out another way. And this time no one will find out."

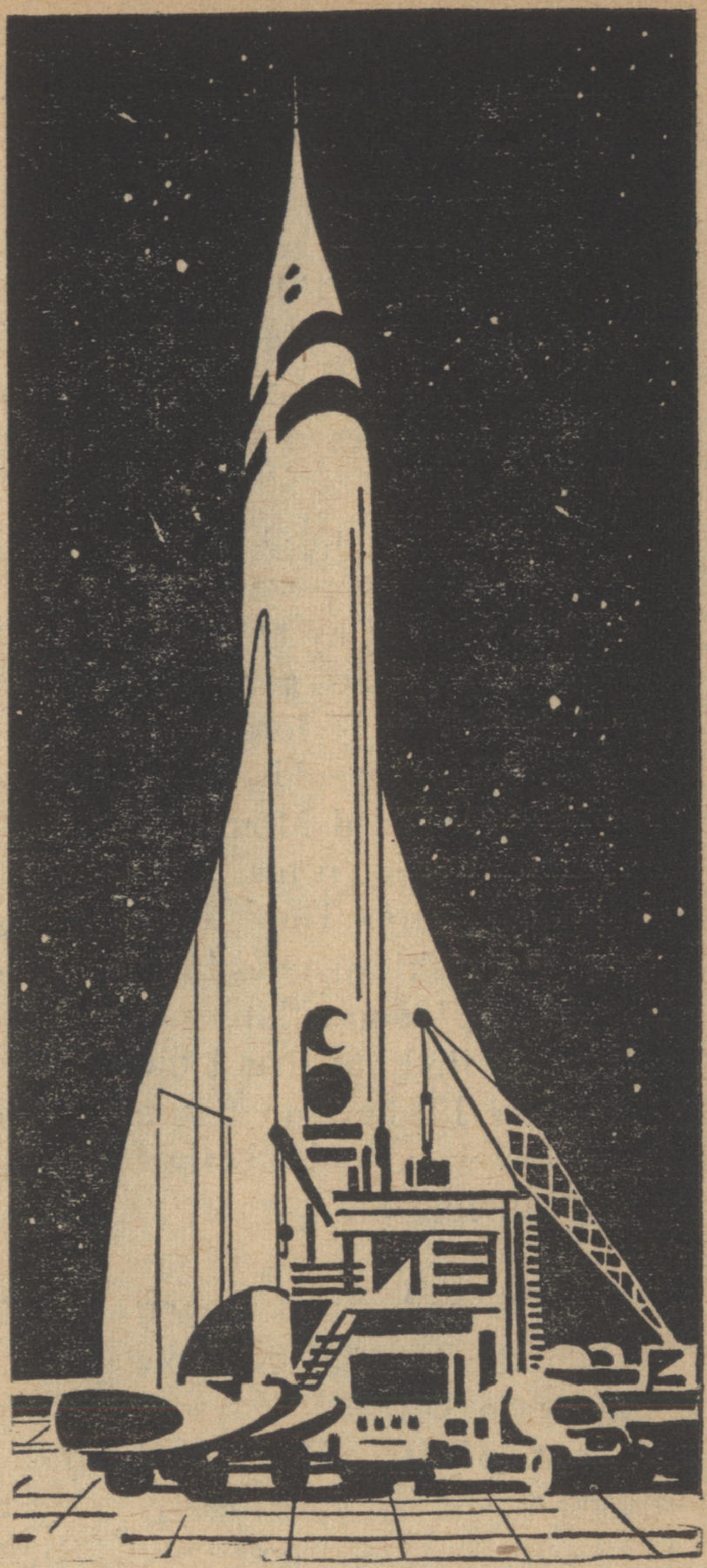
RUPERT had stood frozen while the boy talked, now he began to laugh. "Grayson, snap out of it." He pulled Grayson's sleeve impatiently. "The kid's nuts. Come on. Let's find those other two. They shouldn't have got too far yet—maybe we can make some sense out of them."

Roy was still in the doorway, his head cocked to one side slightly. Then he turned and began to walk away whistling again. He paused and half faced Rupert. "So long, Mister. You shouldn't have said I was nuts. I didn't like you at all before. Now I reckon I hate you for sure." He reached the pine trees where Grayson had stood watching the cabin. There he sat down and closed his eyes.

Rupert watched him curiously for a moment before turning again to Grayson who was still staring at the boy. Shakily the detective held up a finger, pointing; then, wordlessly, he groped for a chair and sat down beside the table. He picked up the dough and began kneading it through and through. Rupert slowly turned to face the doorway.

There was a tangible blackness, a nothingless, a void, pressing, pressing against the open doorway, pressing, pressing against the window panes. Rupert screamed and slammed the door shut against that complete, final night. "It must be the end of space itself," he thought. And Rupert L. Humphreys was never wrong.

Second In A Series Of Definitive Articles



by Thomas N. Scortia

The Race Into Space

II. The Chemical Rocket and Beyond

Wherin we learn that a "free radical" is not something subversive on the loose, but rather a very enticing possibility for use in space flight.

SOMETIME in early 1959, the world's first space ship will be flown.

Whether that ship will be American or Russian is still anybody's guess, but North American Aviation's *X-15*, is very much in the running for this technological "first." Powered by Reaction Motor's 60,000 pound thrust XLR-99 liquid fuel motor, the *X-15* on her qualifying flight will fly as high as 200 miles—well into the area of true space where airfoils become useless, and guidance must be by secondary jets of steam generated by decomposing hydrogen peroxide. The pilot will be hurled aloft with the combined power of 250 B-17 heavy bombers at full throttle, harnassed in an engine burning nearly ten tons of liquid oxygen and anhydrous ammonia, during the course of its flight. After the *X-15's* qualifying flights and complete evaluation by the Air Force, the ship will be mated with the SH-64A Navaho booster, a fantastic, liquid-fueled rocket developing 400,000 pounds of thrust. With that extra kick, the *X-15* is expected to reach 300 to 400

miles with a terminal speed of as much as 18,000 miles per hour.

THAT LAST speed should sound familiar by now. It is the velocity range of the Explorers, Vanguards and Sputniks. The *X-15*, in short, is the U. S. entry for the first manned satellite vehicle, the first step to the fully manned and instrumented space station.

The exploitation of the chemical rocket is moving ahead with fantastic speed. Although two U. S. moonshots have failed, the second one was far from a total loss; it far exceeded all shots into space heretofore, and the information derived from it will have been of great value before this article is in print. Whether a successful moonshot will be made before you read this is anyone's guess. In the meantime, the U. S. is scheduling Mars and Venus probes for the middle of 1959. Elsewhere, in the American desert, the Air Force is now testing components of an experimental atomic ram jet and an atomic rocket engine. It now looks as if the next five years will see an atomic fission or even fusion engine flown.

THE CHEMICAL rocket, in spite of what we shall say later in this series about non-chemical drives, still has a long life ahead of it. While the development of solid and liquid propellants is approaching the limits of energy content per unit mass, limits rigidly imposed by the nature of the chemical bond, the development of hardware for many advanced propellants still lags.

For instance, we have not yet arrived at an efficient nozzle design. An efficient nozzle should convert as much as possible of the heat energy of the gas to mechanical motion by expanding the gas so that its pressure drops from the relatively high pressure of the combustion chamber to the exit pressure: 15 pounds per square inch at sea level, zero in space. Quite arbitrarily, the German scientists at Peenemunde chose a thirty degree cone for the V-2; and because of the ease of manufacturing a cone, we have held to this design in most of our rocket

work, even though it can be demonstrated that a large portion of the energy of the fuel is wasted by inefficient expansion and loss through shock waves formed as the gas collides with the wall of the cone.

Although we are developing solid propellants of great energy, casting techniques for large grains are not yet well worked out. A great deal of experimental work is needed to develop solid propellants of better physical properties. More work is needed on high melting point materials for motor linings, and upon new high energy ignition mixes. (The conditions under which many solid propellants must be ignited require ignition materials with some pretty fantastic physical and chemical properties.)

YET, AS I said before, the limits of chemical fuels can be quite clearly predicted at this point. The simple truth is that one can crowd only so much energy into the chemical bond for later release as that bond is broken. After that you have to look for another source of energy. * The best specific impulses available in unclassified solid fuels today are in the 250-280 seconds range. (Specific impulse, which is abbreviated as "Isp," is defined as the pounds of thrust a given fuel will develop under ideal conditions if it is burned at the rate of a pound per second.) There are undoubtedly solid fuels of higher specific impulse, but it seems unlikely that the Isp of a solid fuel can be pushed much past 300.

Present liquid fuel systems develop specific impulses in the 250-350 sec. range. The upper limit of liquid fuels now appears to be in the area immediately above 400. With certain exceptions, the best fuel and oxidant combination that presents itself is liquid hydrogen and liquid fluorine. The en-

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* Fritz Zwicky, Professor of Astrophysics at California Institute of Technology in *Astronautics* (August 7, 1958: 2: 1, pp 45-9) offers a fundamental theorem that in a conventional chemical reaction, where all of the products are either gases or liquids at standard temperature-pressure conditions, the energy release of the system measured from the ground state cannot be greater than 3 kilocalories per cubic centimeter of the reactants at STP.

ergy release in the formation of hydrogen fluoride (hydrofluoric acid gas) is quite high and the resulting product is reasonably low in molecular weight, an important consideration in deriving the specific impulse. Liquid fluorine and liquid hydrogen in an oxidizer-fuel ratio of 4.5 yield a theoretical Isp of 352 sec.; but in the ratio of 15 weights of fluorine to 1 weight of hydrogen, assuming around 60% conversion of heat energy to thrust, the theoretical Isp is over 400. (See figure 1A.)

UNTIL RECENTLY, liquid fluorine was available only in experimental quantities, and was little more than a laboratory curiosity. It had been used in liquid fuel rockets in a 30-70 ratio, with liquid oxygen to get around what the propellant thermodynamicist calls the "heat sink" effect. When a hydrocarbon such as hydrazine, or alcohol, or petroleum-based jet fuel is burned with oxygen, part of the energy is used in bringing the water vapor formed to the operating temperature. This is an inefficient use of the energy. (It takes significantly more calories to raise steam one degree in temperature than to raise an equivalent weight of carbon dioxide or hydrogen fluoride one degree.) The use of this small percentage of fluorine in the LOX results in little water being formed, since the fluorine preferentially unites with the hydrogen in the fuel to form hydrogen fluoride—while the oxygen is used almost entirely to oxidize the carbon and form carbon dioxide.

SINCE World War II, fluorine know-how has increased until now this violent material will soon be available in large quantities. The General Chemical Division of Allied Chemical and Dye Corp. has entered the field, and proposes to manufacture 1000 tons a year during its first years of operation.

Fluorine has a boiling point of -188.14° C . (-306.55° F.) which is just a bit lower than oxygen. However, where LOX presents a severe fire hazard, fluorine is just about the most diabolical stuff ever discovered. It is certainly the most reactive element known. It is never found free in nature (on this

FIGURE 1A : CHEMICAL PROPELLANT SYSTEMS

Oxidizer	*Fuel*	*Oxidizer/Fuel Weight Ratio*	*Specific Impulse*
LOX	RP-1	2.6	298
LOX	Hydrazine	0.9	315
LOX	Hydrogen	7.0	376
Perchloryl Floride (ClO_3F)	Hydrazine	*	270
LOX-Liquid Ozone (70:30)	JP-4	2.3	253
Liquid Ozone	JP-4	1.9	266
N_2O_4 (Nitrogen Dioxide)	Hydrazine	1.4	292
Fluorine	JP-4	2.6	265
Fluorine	Diborane	5.0	291
Fluorine	Hydrogen	4.5	352
Fluorine	Hydrazine	2.47	366
Fluorine	Hydrogen	15.0	404

* Data from Pennsalt Chemical Corp., mixture ratio not given.

FIGURE 2A : FREE RADICAL SYSTEM, MONATOMIC HYDROGEN IN DIATOMIC HYDROGEN

H/H_2, Weight Ratio	*Specific Impulse*
1:19	200 sec
1:1.5	800 sec
100% H	1210 sec

planet, at least), and is released from its compounds only with great difficulty. LOX in contact with combustible material needs a flame or a spark for ignition. Hydrocarbons—in fact, any organic material, as well as powdered metals—will ignite spontaneously in the presence of fluorine. A coworker tells me of a friend of his who was working with fluorine in graduate school, and thoughtlessly tested his gas generator apparatus by thrusting his finger under the jet. There was fluorine coming off, unfortunately, and his finger burst into flame! It's not surprising that many of the early workers with fluorine didn't survive their first experiments.

Because of this difficulty in handling elemental fluorine, some high-potency oxidizers based on fluorine are being investigated. Among these are such exotic inorganic compounds as chlorine trifluoride, ClF_3, bromine pentafluoride, BrF_5 and oxygenfluoride, OF_2.

Just recently Pennsalt Chemicals Corp. has offered perchloryl fluoride, ClO_3F, in tank-car lots. Pennsalt claims unusual stability for this material and an Isp of 270 with hydrazine. The compound is particularly interesting to propellant chemists since it unites fluorine with another potent oxidizer, perchloric acid, $HClO_4$.

LIQUID oxygen is a comparative newcomer, also. Until recently, liquid hydrogen had a nasty habit of becoming unstable and vaporizing when in storage—sometimes at explosive rates. The National Bureau of Standards announced last year that the addition of hydrous ferric oxide to the liquid gas during manufacture would stabilize it. * This year the USAF contracted with both Linde and Air Products Co. for three liquid hydrogen projects at Painesville, Ohio and Cape Canaveral. Amusingly enough, these hundred million dollar projects are christened

* Hydrogen exists in two forms, ortho-and para-hydrogen, differentiated by the spin function of the electron. The instability of liquid hydrogen arises from the release of heat as orthohydrogen converts to parahydrogen. The hydrous ferric oxide converts all of the orthohydrogen, during processing, to the stable parahydrogen.

Baby Bear, Mama Bear and Papa Bear. (Perhaps the use of liquid hydrogen as a rocket fuel is included in a project called "Project Goldilocks." It would figure.)

IT IS POSSIBLE to approach the performance of fluorine with another oxidizer, liquid ozone. Ozone is the triatomic ozygen molecule that is responsible for the tart smell to the air after an electrical discharge. While ordinary diatomic oxygen is essential to most animal life, ozone is quite poisonous and is often used for sterilization in bacteria-free areas. With liquid hydrogen, it should yield Isp's well above 350. Unfortunately, liquid ozone is still available only in small quantities, but it should become available in workable quantities in the next few years.

Quite apart from these truly exotic oxidizers, the work-horse today is still liquid oxygen, using alcohol or kerosene-like jet fuels. True, the alcohol may be supplemented with a high energy fuel such as the unsymmetrical dimethyl hydrazine used in the Jupiter "C" to launch the Explorers, but alcohol and the petroleum based ramjet and rocket fuels such as JP-4, RJ-1, and RP-1 remain the cheapest and most accessible. Recent breakthroughs by several companies promise that the boron fuels...diborane, higher hydrides of boron, and various alkylated borons...may become common before long.

The table in Figure 1A gives a few oxidant-fuel combinations, with the specific impulses to be expected for given oxidizer-fuel ratios. It should be noted that the specific impulses are based on from 50 to 65 percent conversion of thermal energy to kinetic energy or thrust.

SO FAR, WE'VE said very little about a group of liquid propellants, called monopropellants, which release their energy without the use of an oxidizer. Numbered among these are ethylene oxide and hydrogen peroxide. Hydrogen peroxide in particular has occupied a unique place in liquid fuel rocketry since the days of the V-2. Until developmental work made higher concentra-

tions of peroxide available to the German workers at Penemunde, the stuff was known for its instability at higher concentrations. It was discovered that analytically pure peroxide was quite stable, and that previous instability had been the result of heavy metal impurities which catalyzed the breakdown of the material.

The German workers did use concentrated peroxide as an oxidizer, in conjunction with hydrazine-alcohol fuels and there was some attempt to use the material directly as a rocket fuel. But the principal use of the material then, as now, was as a propellant for auxiliary power systems: to move control surfaces and drive turbines for the electrical power system. The value of hydrogen peroxide for this purpose stems from the basic nature of its chemical structure. The molecule, written as H_2O_2, is unstable in the presence of heavy metals, potassium permanganate, and other materials, and decomposes to yield water, oxygen, and heat. Above twenty-five percent concentration, enough heat is generated to produce steam, and the temperature of the steam increases as the peroxide-water ratio increases. Because the heat release is a function of the bond which is destroyed to release oxygen and water, a given weight of peroxide always releases the same amount of heat. It was this property that proved so invaluable to the V-engineers and to today's missle engineers. Hydrogen peroxide, catalytically decomposed, is a source of *constant* temperature steam which can be utilized to drive a turbine at a constant speed.

SINCE THE end of World War II, increasingly concentrated solutions of hydrogen peroxide have become available until now one may purchase 98% solutions in tank car quantities. One would think that this remarkable concentration would end the story, but recently a new chapter has been added to the story. A. P. Purmal, of the D. I. Mendelev Institute of Chemical Technology in Moscow, has announced the apparent discovery of superperoxide, H_2O_4, prepared by the irradiation of a fresh hydrogen peroxide solution with a mercury arc. Re-

porting in the *U. S. S. R. Journal of Physics*, he points out that, while the superperoxide contains only 97% oxygen—as contrasted with the 94% of ordinary peroxide—the superperoxide will, on decomposition, yield twice as much oxygen as ordinary peroxide. He predicts that the new peroxide will be easier to decompose, have a higher density and a higher boiling point than H_2O_2. For the harrassed missle designer, needing an even higher steam temperature without an increase in component weights or mass flow, the possible use of superperoxide looks very attractive. It is also conceivable that the material may be of interest as an oxidizer, if it can be manufactured and stored safely.

ALTHOUGH we have explored the limitations of chemical fuels as they are now being used in both solid and liquid rocketry, there is a back side of the coin that should be considered, and that's the possibility of using what the physical chemist knows as free radicals and meta-stable excited states.

"Free radicals," a chemist friend of mine once remarked, "are a lot like a cow with its tail chopped off. It's still a cow, but there's something missing...and the cow's hard to get along with." A free radical is something of a supercow, so far as the propellant chemist is concerned. If pure monatomic hydrogen, a free radical, could be used for fuel, for instance, we might expect specific impulses greater than 1200!

As you may have gathered the free radical is a queer sort of animal and I hope you will bear with me a bit during the explanation that follows. The remarks on free radicals are, of course, necessarily incomplete since we are mainly interested in those that seem most desireable as propellant systems.

For our purposes, we can visualize the atom as Bohr saw it—that is, as a heavy nucleus surrounded by negatively charged electrons, arranged in succeeding shells holding from two to eighteen electrons, depending on the element. Now, the chemical properties of an element are always determined by the electrons in the outer-

most shell. If this outer shell is a stable configuration—that is, if it is filled with eight electrons as in all of the noble gases such as neon (with the exception of helium, where the stable configuration is two)—then the atom is inert chemically for all but the most drastic conditions of temperature and pressure.

ALL ELEMENTS, other than the inert noble gases, try to attain this stable configuration when they form compounds. Thus, oxygen, with six electrons in its outer shell, reaches the stable configuration of eight by sharing two electrons from each of two hydrogens to form water, H_20.

The hydrogen in water shares electrons with the oxygen so that the hydrogen reaches its stable configuration of two. (Hydrogen and helium are the only two elements with this configuration.) Another way of looking at the situation, depicted in Figure 2, is to say that the oxygen now holds two electrons in common with each hydrogen. Figure 2 also shows the situation with carbon dioxide, CO_2, where the outer ring of carbon with four electrons adds four more electrons, two from each oxygen, while the oxygen atoms share two of the electrons from the carbon atom.

Now the reason for this sharing can only be shown by a quantum mechanical treatment; but it should be noted that in each of these stable compounds, the electrons around each atom, and the electrons involved in each interatomic bond, are paired. This pairing of the electrons is important to the stability of the molecule since each electron has a spin (indicated in 2) which generates a strong magnetic moment. The paired electrons have opposed spins, so that these magnetic moments cancel out. To remove one of these electrons without disturbing its mate takes a great deal of energy; and we would expect that the resulting fragments, with an unpaired electron, would be very reactive—with the reaction leading to the gaining of an electron and the release of quite a bit of energy.

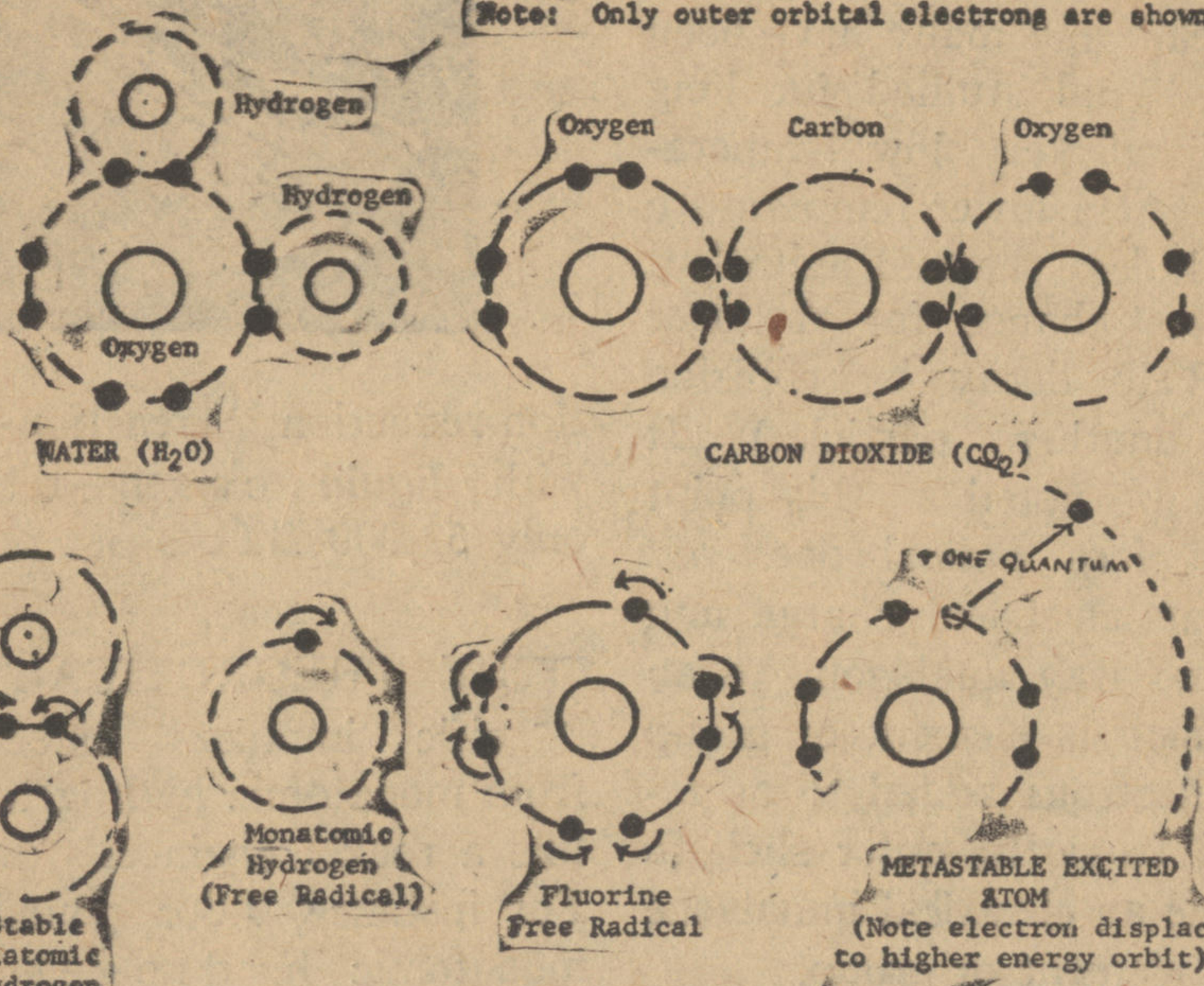


FIGURE 2: STABLE MOLECULES, FREE RADICALS, AND METASTABLE EXCITED STATES

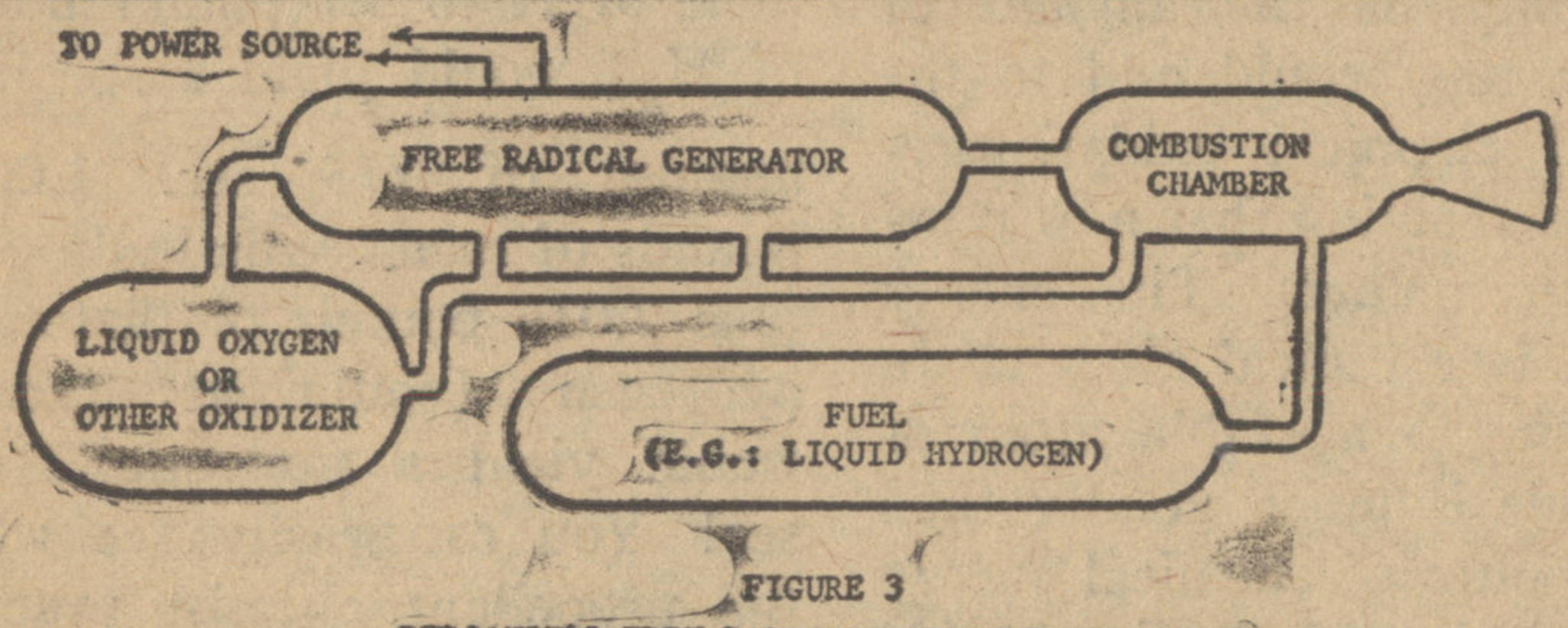
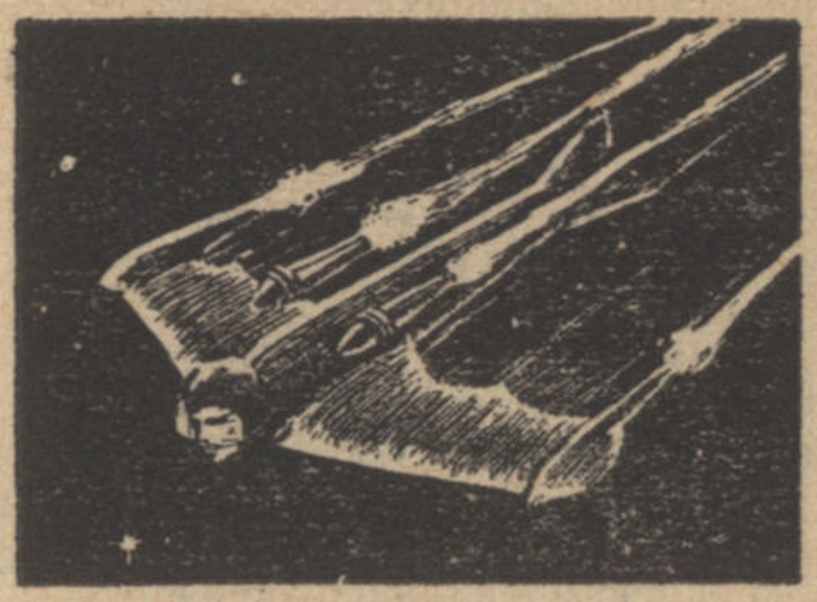


FIGURE 3
BERGAUST'S FREE RADICAL SUPPLEMENTED MOTOR

FIGURE 2 depicts several free radicals, species with an unpaired electron. Because of their reactivity and their instability due to the unbalanced magnetic moment, most free radicals have a short existence. Nevertheless their existence

has been known for quite a few years and many have been trapped and studied for long periods at very low temperatures. (At a lower temperature there is less thermal agitation, and less chance for the free radical to decay by collision with another particle.) It should be noted at this point that a free radical does *not* have an electrical charge and is in no way analogous to an ion which is element or group with electrons added to or removed from the outer shell to produce an electrical imbalance in the element or group.

The fascinating thing about free radicals, in spite of their instability, is the amount of energy they could add to the normal chemical oxidation-reduction reaction that now powers our rockets. The energy that a free radical gives up in reverting to a stable atom or molecule is much greater than the amount of chemical energy to be derived from that stable atom or molecule in an oxidation-reduction reaction. Thus, monatomic hydrogen in going to diatomic hydrogen releases 92,910 BTU's per pound, while diatomic hydrogen in an oxida-



tion-reduction reaction—say with liquid oxygen—releases only 52,000 BTU's per pound.

THE THEORETICAL specific impulses calculated from monatomic hydrogen look like a rocket engineer's dream. For instance, 1.008 pounds of monatomic hydrogen plus 3.427 pounds of ordinary diatomic hydrogen (one pound-mole of H to 1.7 pound-moles of H_2) would yield a specific impulse of 775 sec. 1.008 pounds of monatomic hydrogen plus 2.016 pounds of diatomic hydrogen (equimolar ratio) would yield a fantastic 2160 sec! You can easily see why the propellant chemist practically drools when he starts writing free radical equations.

However, the pesky things are just too unstable. The production of free radicals is being studied intensively in sev-

eral major projects throughout the country, and production by both radiation and electrical discharge seem workable. The problem of stabilizing these evanescent fragments is a tough one, and remains to be licked. H. W. Ritchie of Thiokol Chemical Corp., a leading solid propellant manufacturer, has suggested that free radicals might be stabilized by imobilizing them in the structural matrix of a solid propellant, so that their thermal motions may be restricted. From the present state of the art of making solid propellants, I suspect that this isn't likely to be possible for quite a number of years.

QUITE APART from the actual production of free radicals in the laboratory, there is a natural source of them in the upper atmosphere of Earth, where solar and cosmic radiation produces significant concentrations of the free radicals of oxygen, nitrogen and its oxides, and hydrogen. Several writers, such as P. H. Wyckoff of the Air Force Cambridge Research Center, have suggested at various times that a high-flying jet or atmospheric rocket might be designed to scoop up these free radicals at high altitudes and recombine them catalytically to give an extra boost to their conventional motors.

Whether or not this device is feasible, the existence of large concentrations of free radicals in the upper atmosphere was demonstrated very dramatically in 1956, when a rocket loaded with eighteen pounds of nitric acid was fired into the ionosphere and detonated. The nitric acid was scattered over a volume of the ionosphere and catalyzed the immediate decay of any free radicals in the affected volume. The result was a brilliant patch of light in the sky that reached an estimated half a million candlepower at climax! (Now there's a science fiction gimmick for the taking.)

AS IF ALL this weren't complicated enough, there's an even more exotic possibility in chemical fuels. This involves the utilization of atoms in what the physicist calls metastable excited states. For the discussing of them, we'll have to return to the model of the

atom we mentioned earlier, and amplify the picture a bit. It should be pointed out again, however, that we're using a much oversimplified picture in terms of modern physics; but this picture will serve the purpose of our discussion quite nicely.

We pictured our atom as being composed of a nucleus, with a number of electrons arranged in orbits or shells about it. To expand this picture, we must now understand that there are a number of higher orbits that the outer shell of electrons may occupy. These higher orbits require that the electron occupying them have more energy; and for one or more outer shell electrons to rise to one of these higher orbits, energy must be adsorbed from outside the atom. These higher orbits or energy levels are at a discrete distance from the nucleus, and the electron may not exist in any space between these discrete levels. This is dictated by basic quantum theory, which says that an electron in an atom may adsorb ór give up energy only in discrete packets called quanta. (See figure 2).

NORMALLY, when an atom adsorbs energy from its surroundings, the electrons in the outer shell increase their distance from the nucleus in a so-called quantum jump. At the first opportunity thereafter, the electron emits this energy as electromagnetic radiation and sinks to its original orbit. In this manner, the atoms of phosphor in a television tube screen adsorb the kinetic energy of electrons striking them, become excited as their electrons rise to a higher state, and then decay as their electrons return to the ground state by emitting electromagnetic radiation—in this case, visible light. The same mechanism holds for the light-producing phosphor in fluorescent lights when it is excited by ultraviolet light generated in the tube by an electrical discharge through mercury vapor. Indeed, the electric current itself is exciting the mercury atoms which decay by emitting ultraviolet radiation. As a general statement, almost all electromagnetic radiation stems from a similar mechanism.

WHILE THE emission of the adsorbed energy under normal conditions is immediate, some materials such as phosphorus store this energy for long periods. The emmission of adsorbed energy in other materials may be delayed by cooling the excited atoms to very low temperatures. For instance, ordinary lucite can be cooled with liquid air and irradiated by a radioactive source without apparent effect. The atoms are actually being excited, but the excited atoms do not decay to their ground state at that temperature. However, if the lucite is allowed to come to room temperature, it will emit visible light and continue to glow until all of the absorbed energy has been emitted.

This area of chemistry, known as metachemisty, then offers a possible source of high energy propellants. Such a metastable excited propellant would be analogous to a storage battery in the sense that energy is stored in the excited atoms by raising the outer electrons to an excited state and later given up in a rocket motor, by allowing the excited electrons to return to their ground state.

THE NATIONAL Bureau of Standards, among others, is actively studying this field at the moment. While the methods of production of these metastable atoms are well known, the stabilization and concentration remain a major problem—a problem in many ways similar to the stabilization and concentration of free radicals. The major drawback of these materials is the extremely low temperatures needed for storage. Neon, for instance, may be excited to quite high energy states; but at the very low temperature of ten degrees above absolute zero, the half-life of the metastable species, i. e. the time in which one half of a given number of excited atoms will decay, is only 25 seconds. (Free radicals and metastable excited states follow the same exponential decay pattern as radioactives, and thus their stability is expressed by stating their half-life.) On the other hand, experimental data indicates that the same metastable neon at five degrees above zero may

have a half-life measured in years.

Neon, of course, is chemically inert and cannot be oxidized to yield further chemical energy after it has given up the energy of its excited state. The ideal system would use a metastable excited state of some fuel as hydrogen which, after giving up the energy of its excited state, could be further reacted with an oxidizer such as fluorine to yield more conventional chemical energy. While we're dreaming, what's to prevent us from imagining that the fluorine itself is in a metastable excited state? If this were so, the resulting energy release would be truly fantastic.

LET'S NOT labor under any illusions, however. The problems of stabilizing workable concentrations of both metastable excited states and free radicals are enormous, and not likely to be solved this year or next. The heavy masses of refrigeration equipment needed to hold these materials at a stable temperature precludes their use at present. Some other stabilizing technique is needed before either will find use in a chemical rocket, and it now appears that a fission or fusion rocket may well be developed before the techniques to handle these temperamental materials.

However, the development of a portable fission or fusion power source does offer the possibility of using the technique proposed by Erik Bergaust in *Missles and Rockets*, March, 1958. Mr. Bergaust suggests a motor whose chemical energy is supplemented by free radicals, which are generated while in flight. Using present power sources he suggests that the system detailed in figure 3 might yield an immediate increase of 50 seconds in the Isp of conventional fuel-oxidizer systems. His proposed system diverts part of the LOX flow to an electrically-powered free radical generator, which converts the LOX to monatomic oxygen. The energy consumed in producing the free radical oxygen would then reappear in the motor as the oxygen reverted to the diatomic state and oxidized the fuel. It is possible that the same tech-

nique might be used with metastable excited states.

QUITE APART from offering an immediate application of these fascination chemical species, Mr. Bergaust's proposed motor offers a solution to the more immediate and pressing problem of how to apply nuclear power to rocket drives capable of leaving the earth's surface. (Later we'll talk about other atomic drives which can operate from a satellite orbit.)

Presently, all of our nuclear reactions yield their energy as heat and this heat is then used to heat a working fluid which carries heat to a turbine to generate electricity. To apply nuclear power to a rocket drive, we must learn how to use this heat energy to accelerate a reaction mass. The big problem here is the problem of heat transfer—that is, how to transfer this energy fast enough to the reaction mass to expell that mass at a high velocity. Obviously, no intermediate working fluid will serve to carry the massive amounts of energy needed.

IN PART III of this series, we will discuss the possible approaches to transferring this energy directly to the reaction mass. In the meantime, the motor in figure 3, utilizing electricity from a direct conversion generator of the type we shall discuss later, could transfer the energy of a nuclear reaction to the motor by way of the formation of free radicals. It is possible that the nuclear reaction could be used directly for the production of free radicals.

The direct production of electric current from nuclear reactions is an important field in today's research, and several devices have been proposed. The application of these to the motor in figure 3, and to some of the really exotic drive principles now being considered, will occupy much of part III of this series. I warn you: Section III will discuss some of the most fantastic, yet workable, gadgets ever to be imagined by man. They are the very stuff of science fiction dreams, and they are anything but impractical—anything but "things of the distant future."

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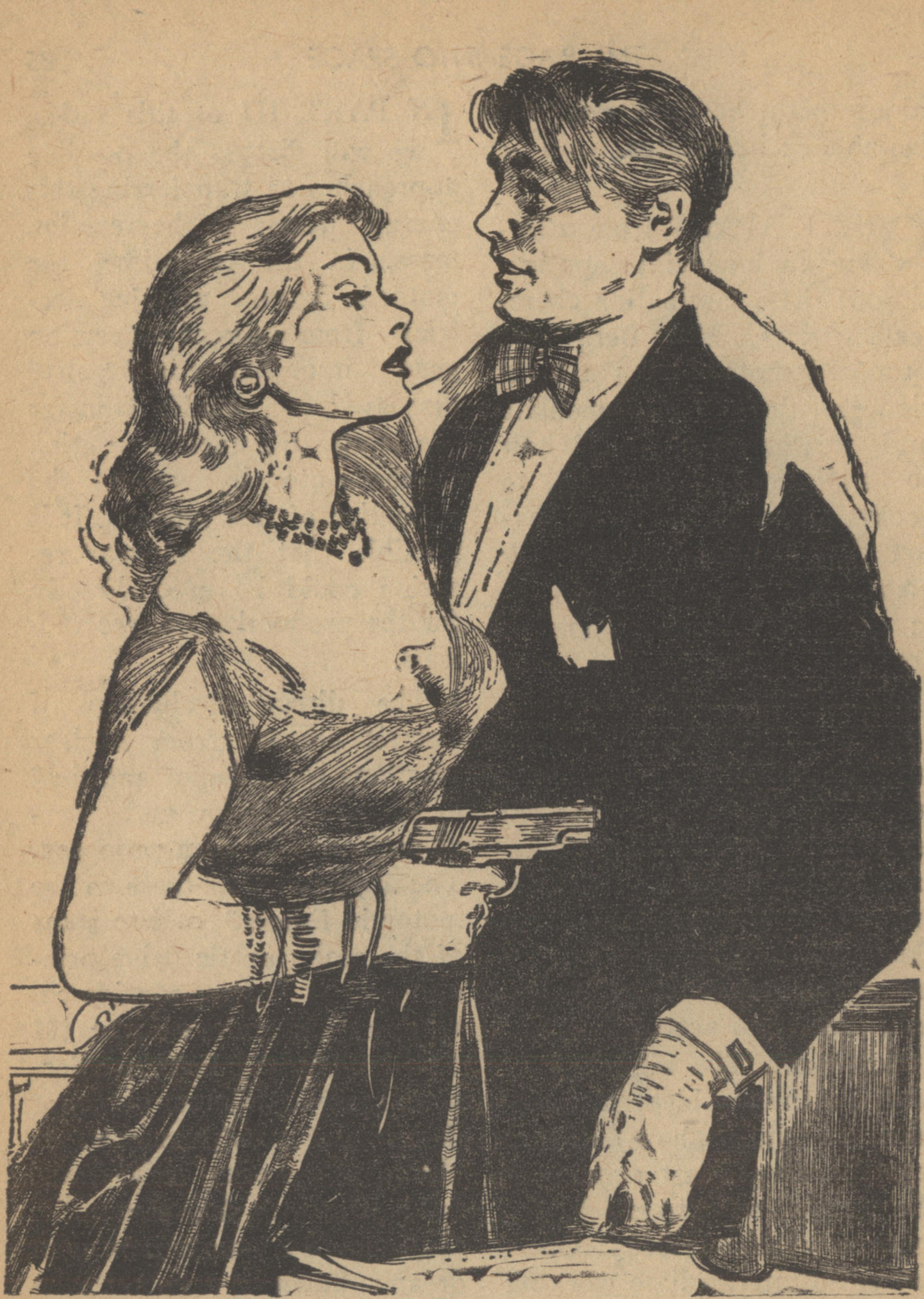


One of the contestants tried to combine seduction and coercion on a judge, but it didn't work...

you do something to me

by CALVIN M. KNOX

May Loreen was a shoo-in for the "Miss Universe" title, so I figured that she'd be a sensation at the Galactic Fair. I was right . . .

NOW THAT everybody else at this end of the galaxy has put in his two units' worth about the affair currently known as the Miss Universe Scandal of 2381, I figure it's high time I said my own say—just for the records, you understand.

I'm Nick Seferiades, and I'm a talent agent by trade. It was my foul luck to be agenting for May Loreen when she became Miss Universe of 2381. I guided that girl right up to the pinnacle of celestial glamour. I was going to make her name a household word on a thousand and one planets.

Well, I sure did!

Yeah.

But not the way I would have liked. Not the way I would have liked at all. So here I am, Nick Seferiades, the Golden Greek of the entertainment world, cooling my heels in the balmy obscurity of Zeno XII. I watch the palm trees drooping in the blazing sun, and I sip palm-wine and swim in the coral-blue sea, and once a month I clip my coupons and go to the bank. Not a bad life at all, you say? No, I suppose

not. But not the life for me, here in quiet retirement fifty light-years from Broadway.

I miss the whirl. I miss the gaiety. I miss the champagne and the sweetly-flowing dough.

But I don't dare go back, all because of May Loreen. How the deuce can I, when I'm a laughing-stock on every human world of the galaxy?

Here's what happened, straight from the horse's—straight from the shoulder, I mean. I kid you not, this is the true and undoctored story. I don't have any motive for doctoring *now*, do I? I couldn't repair my reputation even if I papered the Asteroid Belt with affidavits.

IT STARTED with a phone-call on, according to my records, the fourth of February, 2379. I was busy arranging a spring tour for one of my clients. I snapped on the screen and saw the fat, jowly face of Ted de Vera glowering at me. His cigar was sticking so far out of the tridim image that I pulled my head back like a scared turtle.

"Got a girl for you, Nick," de Vera said in that obscene belly-rumble that passes for his voice.

I raised an eyebrow. Ted de Vera rarely touted a female without cause. "Tell me more."

"She's a knockout, Nick. She's got everything except polish. She needs a master hand to guide her. I think you're the man."

"Nice of you to say it. Where can I get a look at this paragon?"

"Say the word and she'll be at your office in half an hour," de Vera promised. His eyes glinted. "I'm sure you'll go for her. Gimme the usual deal?"

I sighed. "The usual," I said. "Five percent of my ten percent. Plus the same on all residuals. You're a parasite, Ted."

"I've got an eye for the girls, laddie. Don't begrudge me my meager moolah."

HALF AN hour later my door-scanner lit up, and I took a look at what was standing in the golden field and realized that that old lecher de Vera had bonged the gong once again. The man had an infallible eye for sex appeal. The

girl waiting outside had everything.

I straightened my ruff and tidied my desk and said, "Come in?"

The door opened. The girl glided in and said in a thin, pinched, nervous voice, "Mr. Seferiades?"

At least she knew how to pronounce it. "Call me Nick. You're the girl Mr. de Vera recommended, aren't you? I didn't quite c a t c h the name..."

"Marion," she said. "Marion Tweedy. My friends call me Molly."

"Sit down, Molly," I said.

She sat, hiking her dress up to her lovely knees with a kind of artless sexiness that made me feel twenty years younger and thirty pounds lighter in a flash. I was momentarily dazzled by a lot of bright white perfect teeth. I got control after a moment more, and said, "I suppose you want to become an actress, Molly."

She nodded. "But I don't think I have much talent. I mean—they say I'm pretty, and I suppose I am, but I don't think I can *act*. I just don't feel *sincere* playing the part of somebody else."

I PRETENDED to jot down notes. "Don't let that trouble you, Molly. Just stick with me, and you'll be famous before you know it. How would you like to be Miss Universe, as a starter?"

She gasped. "Miss..."

"Why not? You've got what it takes, and I know how to promote. But Molly Tweedy won't ever make the grade. You'll need a new name, for certain." I frowned. "May Something. I need a last name."

"May Lawrence?" she suggested. "Lawrence is my father's first name."

"Uh-uh. Lawrence has masculine connotations. It'll never go over subliminallywise. We need something softer, more feminine. *Loreen*. Yeah. That's it. May Loreen."

"May Loreen," she said, as if trying her new name on for size. "It sounds strange."

"Don't fret," I told her. "It takes time to get used to a new name. But May Loreen's going to be a name that goes echoing through the universe!"

BY THE END of that day she was signed and sealed. What a find! And pure as the Himalaya snow. If I had been younger or more lecherous, I might have tried the casting-couch routine, but somehow I couldn't bring myself to do it. And I sensed that if I left May Loreen alone and didn't make any passes, our business relationship would be a lot more successful in the long run.

So I showed her where the screen was, and she got behind it and changed into the swimsuit she'd brought along, while I fidgeted and twitched and longed for X-Ray vision. My jaw sagged when she came out. May Loreen was as perfect a specimen of *H. saps* female as I had ever beheld.

She was tallish, five feet five, with long, lovely legs that tapered in what I was sure was a mathematically precise curve. Her figure checked out at 37-23-37, which they tell me is the 24th Century idea of perfection. Her skin was a creamy unblemished delight that contrived to look both milk-white and healthily tanned at the same time. Her blonde hair tumbled prettily. Her eyes were alive and sparkling, her lips full but not heavy, her nose a gem.

This girl was *it*, I told myself. This Girl Was *It*. She had everything.

Everything, that is, except the poise and sophistication that a glamour queen needed. But with her other natural equipment I wasn't worried.

I TOOK HER under my wing, in the most platonic way you can imagine. I paid a visit to her parents—a grouchy old pipe-smoking truckdriver and a weatherbeaten faded little woman—and promised them that within three years they could retire to a villa on Venus. I came away from there with their blessing and with a renewed sense of bewilderment about how something like May could spring from such unpromising stock.

I moved May into a midtown apartment, put her on salary of $150 a week, and set her up with my usual team: the dance-and-posture coach, the voice coach, the whole bunch. It was a regular Pygmalion job. But such raw material! A fe-

male like May Loreen comes along once in half a dozen lifetimes.

At my instructions, she made no attempt to get romantically involved; I didn't want her falling in love with some $30-a-week clerk and queering her chances for the big prizes that lay ahead. So she spent her weekends reading and listening to music, and otherwise improving her mind, at a little country place I maintained for such purposes.

She progressed magnificently. I watched her personality unfolding like a flower. No longer was she the shy little girl, astonished and upset by the fact of her own beauty; she glowed radiantly, now, proud of her unique endowment and determined to make the most of it.

Carefully, I planned out her career. We would enter her in the beauty contests, use them as springboards up into the tridim studios. In three years, I figured, she would be considered a full-fledged starlet. In five years, she would be a star actress, with billings all over the galaxy. At that time, at the height of her fame, she would make a spectacular marriage to some rising male star. The marriage, I figured, would need to last about twenty months for maximum effectiveness. At the end of four years as a first-magnitude star, she would retire, quitting while she would still be beautiful and famous and only 32. By that time I would have set up an investment program for her that would bring her a handsome income, would bring me ten percent of a handsome income, and would bring Ted de Vera five percent of my ten percent, all for the rest of our lives.

So it didn't quite happen that way. It was all because of that damned Galactic World Fair. But I'm jumping too far ahead of myself, now. I ought to be putting this down in sequence, so you know how it happened.

All during the spring and summer of 2379, we worked on May Loreen, and the results were superb. I began engineering a little groundswell of publicity that would grow to floodtide in twelve months' time. By the end of '79 everybody who mattered knew that there was a girl named May Loreen around, who was being groomed

by Nick Seferiades for lofty heights. And such was the magic of my name, in those days, that May's stock began to boom.

I entered her for Miss New York State in January of 2380, and she took it with such ease it was ridiculous. All she had to do was promenade up and down in that skin-tight white bathing suit of hers, smile and wiggle her fanny, and the judges flopped over like Venusians out of water. It was a cinch to grab off Miss United States next. One of the contestants tried to combine seduction with coercion on one of the judges, but it didn't work. The gal would have probably won on her own in any other year—we managed to hush her indiscretion up.

There were a flock of tridim offers, but I turned them all down.

AS MISS United States, May was eligible for that year's Miss Earth contest, and won that also—although for a while I was worried about a belle from China who had the judges wowed with her fragile-porcelain kind of beauty. The month May Loreen captured the Miss Earth title, her photo was on the covers of two dozen magazines. It was blinding to stand at a newsstand and look up.

After Miss Earth came the Miss Universe contest. Now, as everyone knows, the "Miss Universe" label is a misnomer. The contest is limited to female members of the species *H. sapiens* only, since there aren't any very convenient standards for judging one planet's kind of beauty against another's. Once upon a time, there was a contest for beauty queens of different planets, cooked up by a smartypants promoter who lived to rue the day. The gimmick was that the winner would be the entrant who most closely approximated the standard of perfection of her *own* world.

So a creature looking like a warthog crossed with a dugong showed up as the entry from Alpheraz V. Turned out that the people of Alpheraz V are all but extinct, and that Miss Alpheraz was the only living adult female of her species—so she *had* to be the most beautiful of her kind. She demanded and got the award, and the

promoter was never heard from again.

EVER SINCE that classic fiasco, Miss Universe has been open to humans only—and I don't mean *humanoids,* but human-type humans. Naturally, there were more humans on Earth than anyplace else in the galaxy. Of the fifty candidates for Miss Universe, thirty were from Earth—and most of them were girls that May had already beaten in one contest or another. The rest of the girls came from the colony worlds. Miss Mars looked like a coalminer, Miss Venus like a longshoreman, Miss Ganymede like a snow-shovel. It couldn't be helped. Beauty queens don't emigrate to the colony worlds. They stay in orbit between New York and Paris, keeping far away from any planet where they would be required to soil their hands with Work.

On Mars, if a girl doesn't fill her work quota and doesn't have an awfully good excuse, she gets shot. There's no room for slackers up there. But such a place isn't conducive to developing such useless things as beauty queens.

In short, the other candidates for Miss Universe didn't matter. May Loreen was a shoo-in. She was such a shoo-in that when I tried to place bets on her I couldn't find a bookie in the Western Hemisphere who would touch my money. They don't make book on walkovers.

I DON'T HAVE to tell you who won, do I? It was a breeze, a romp, a runaway. May Loreen captivated the judges from the start. You could see from the faces of the other girls that they didn't think they stood a chance, either. Some of them didn't even bother to keep their shoulders back and their lungs inflated as they crossed the stage.

I phoned Ted de Vera that night, after the result was announced. The contest was held in the Lunar Bubble, and de Vera was in Chicago, so the call set me back a shiny fat figure. But I didn't care about a mere hundred-buck phone bill. Not then.

I chortled, "We did it, Ted! May won!"

"Are you surprised?"

"Of course not. But think of

it, Ted—your discovery, hailed as the most perfect woman of all time!"

"I always had a good eye," de Vera said modestly. "I'll be looking forward to my check."

IT WAS ALL going to be straight up, after that night. We threw a big party, and got wonderfully high: you'd be amazed how fast—and on how little—you can get sozzled in the Lunar Bubble, with that low grav, especially if some wise guy monkeys a little with the atmosphere that's being fed into your section of the dome. We were half lit on oxygen drunks before the festivities got started, and we were gloriously pickled not much later.

I remember May kissing me, full square on the lips, as an expression of glee. The sensation was so uncanny that it nearly sobered me on the spot. May was a Good Girl, but if she went around kissing people gaily all night, some of her virtue might evaporate pretty fast. So I laid off the sauce the rest of that night and kept an eye on her, just in case she forgot her training and decided to intertwine with one of the judges under a table.

My chaperoning worked out pretty well. May got back to Earth at the end of that week with her honor intact; I was determined that this was *one* beauty queen who would remain unsullied until the strategic moment came.

The money flowed in marvelously. If I had accepted all the modelling offers, May would have been posing thirty-six hours a day for the next three centuries. I hired a staff of ten to winnow the mail. Video network men fell all over themselves trying to arrange guest spots for May Loreen at five grand per minute. Tridim scouts pleaded for her signature on seven-year contracts. I bided my time, milking it for all it was worth. May Loreen was going to be a lifetime annuity for me, and I wasn't going to let her go cheap.

AND RIGHT at this point, I made my big mistake. If I had been a better Greek, maybe I would have known. But not dumb Nick Seferiades.

The Greeks had a word for it: *hybris*. Overweening pride.

I know all about it, now. King Agamemnon insisted on having a red carpet rolled out for him, and the gods conspired to knock him off by way of showing a lesson in humility. Well, the same with me. I had this girl, May Loreen. The best that ever was. You looked at her, and it *did* something to you. She was perfection itself.

So I got a bright idea. I figured out a way to emblazon May Loreen's perfection across the Milky Way. The Greeks of old would have said I was reaching too high, riding for a fall. Committing *hybris,* in other words. Well, hindsight is a wonderful thing, but maybe I would have gone ahead and done it anyway, even if a Cassandra came up to me and told me what was going to happen.

There was this Interstellar Fair, you see. The Grand Show of the universe, held once every three hundred years. It was scheduled to take place on the planet of Validus, a couple of hundred thousand light-years from Earth in one of the star-clusters.

This place was so far out, that no Earthman had ever been there. Of course, there are plenty of planets where no Earthmen have ever been; they tell me that there's an infinite number of planets in the universe, and only a finite number of Earthmen, many of whom never get much further from home than an occasional gay fling at the Lunar Bubble.

THREE HUNDRED years ago, when the last Interstellar Fair was held on Validus, Earthmen were still putputting around the Solar System in ion-drive ships. The nullwarp was still a couple of decades in the future, and regular commerce with other stars was undreamed-of. So there was no Earth exhibit at the Validusian Fair that was held in 2081.

But this time, Earth had been invited to participate. There were no diplomatic relations at the moment between Earth and Validus, but the Validusians had made known their invitation through a couple of intermediary planets, and in the name of Earth the invitation had been accepted by World President Onomodze.

And I got my big idea.

There was all this fuss about

setting up the Terran exhibit at the fair. We were sending our best symphony orchestra, and an exhibit of Terran paintings, and samples of Terran handicrafts, and just about everything else that represented a notable Terran achievement.

Except one thing. We weren't sending anybody to represent the matchless beauty of Terran femininity.

I PULLED strings. I spoke to a friend who spoke to a friend. And suddenly I had myself an invitation to visit President Onomodze at the Capitol Building in Accra.

Half an hour later, I was on a transatlantic jet bound for the world capital. Not very much later that day, I was in Accra, being whisked from the airport to the Capitol by special limousine. And by dinnertime that night, I was sipping excellent brandy in the Presidential suite while President Onomodze himself riffled through my tridims of May Loreen and nodded in keen appreciation.

At length he looked up at me and flashed his famous grin. "She *is* beautiful. She is a marvel!"

"You'll send her?"

"Of course!"

And so I returned home with the good news: we were being sent to the Fair! The publicity, of course, was tremendous. May Loreen had been chosen above all women to represent Terran pulchritude on Validus, and you can imagine what kind of an honor *that* was. May was elated. I counted dollar bills in my sleep. We'd be rolling in megabucks by the time the grand tour was over.

THE TRIP to Validus took six weeks, even by nullwarp, which ought to give you some idea of how far away it is. The World Government, of course, paid for our passage both ways, and threw in enough to pay for May's hairdressers, wardrobe attendants, and other miscellaneous camp followers. Three or four reporters went along in the ship too, sending back daily despatches about Miss Universe and her retinue.

As it worked out, we were practically the first Fair guests to arrive on Validus. The Terran exhibit hall was being built

by local labor, since it was impossible to transport Terran workmen all the way there and back. The hall was almost finished, and the Terran personnel who had arrived ahead of us were installed in a hotel nearby, all together. The Validusians gave us a big welcome, but they didn't seem too happy about having much contact with us. Nor, in truth, did we go out of our way to pal around with the locals, because they were repulsive-looking little creatures.

THE VALIDUSIANS were humanoid in general set-up. Maybe that only accentuated their frightfulness. I can get used to an extraterrestrial who looks like a slimy one-legged blue egg, but the ones with humanoid forms always give me the willies. And these were definitely unpretty.

They were three or four feet high, with the right number of arms and legs and heads. Their skins were the color of boiled lobsters, a dismal reddish hue, and there was a thick, wrinkled, leathery look about their hides that made them even uglier. In place of hair they had a lot of purple spikes packed close together and standing three inches high or so on top of their big heads. Thick antennae sprouted from each temple, ending in a little buttonny sort of thing the size of a pea. Their noses were grisly little slits and their eyes looked like bulging peeled potatoes with a raisin stuck in the middle. You can see why we kept to ourselves and didn't mingle much with the locals during the time the Fair was getting organized. We kept busy, though, sending back elaborate stories of what Miss Universe was up to on Validus, how members of various other races had remarked in awe on her beauty, and such. I remember one snatch of press-agentry particularly well, for reasons you'll learn later:

"... *Shtialimin Krenn, a ranking musician in the Rigelian thonkin orchestra, declared after viewing Miss Universe, 'Her perfection is immediately evident.' Here on Validus all races join in tribute to the loveliness*

of May Loreen, proving that there is an absolute standard of beauty at whose summit stands the glorious Miss Universe, May Loreen..."

Yes, I'm going to remember that little puff for the rest of my weary days. It haunts me. Oh, my departed Athenian ancestors!

I'LL SKIP over the days before the Fair opened. They were days we spent consuming exotic beverages and doing a remarkable amount of time-wasting.

The affair currently termed the Miss Universe Scandal of 2381 took place the night before the official grand opening of the Validusian Fair. I wasn't there. Maybe things would have gone differently if I had been; I don't know, but I like to think they would have.

Celebrities from all over the universe would be on hand for the grand opening. It was my idea to open the Terran exhibit by having May come out, wearing a sexy swimsuit and her Miss Universe badge, and welcome everyone to Earth's first participating effort in a Validusian fair. The way I figured it, she would be a knockout.

Well, there was a rehearsal the night before. Sam Carmody, who was Coordinator of the Terran Exhibit, wanted everyone to run through his part in advance. It was a logical request.

ONLY...I HAD been on a bit of a bender *two* nights before the Grand Opening, and I hadn't quite recovered yet. A Denebian had showed up with a bottle of milk-white Denebian booze, than which there is no more boozier, and somehow the Denebian and I downed that entire quart bottle—no paltry fifth—within a few hours.

I understand that the Denebian's shell softened as a result. Me, I got off without any physical damage. But I woke in a fog, with the grand-uncle of all hangovers, and there wasn't any question of my attending the dress rehearsal. I was going to have to stay in bed and consume miscellaneous wonder drugs to clear the impurities, congeners,

and extraterrestrial fusel-oils out of my overhung head.

Dimly I remember May Loreen standing over my bed and murmuring, "Poor Nick! How do you feel?"

I didn't answer. I just groaned.

She said, "Aren't you going to come with me to the rehearsal?"

I groaned again. This time I opened my eyes and found them staring into a notable and highly famed bosom. I raised my glance, smiled feebly at May, and croaked, "Good luck." Then I shut my eyes again; the light from the bulb overhead was pounding my seemingly-exposed optic nerve mercilessly.

Mentally I pictured that lovely body in its skimpy swimsuit perched at the edge of my bed while I lay crumpled up with self-inflicted ills, and I groaned again. Slitting one eye open, I caught a glimpse of May hip-wiggling her way out of my room. The door closed.

And, though I didn't know it then, all sort of trouble was beginning.

I SPENT that night in total delirium. But I've managed to piece together everything that happened. And it went something like this:

May, after coming to pay her sympathy call to me, started down the hall, a veritable Aphrodite, on her way to the dress—or, in her case, undress—rehearsal. She rounded a corridor suddenly and was scared half out of her wits by two piercing shrieks of pure horror.

For a moment or two, she was too startled to think. Then she saw the source of the shrieks: two utterly terrified little Validusians, scrambling away from her in a panicky retreat, frightened practically to jelly by her sudden appearance.

I'll give her credit for it; she has presence of mind. She saw they were wearing translator belts, so she smiled at them—that megabuck smile of hers—and said in English, "Don't be afraid of me. I won't hurt you."

THE TWO Validusians turned and looked at her suspiciously. May told me she was pretty revolted by their repulsiveness, but she remem-

bered that she was here as an official representative of Earth, and she acted accordingly. She posed for them. And, slowly, the Validusians recovered their mental equilibrium.

"Forgive us for this display of terror," they begged her. "The sudden sight of you, unexpected, without proper preparation..."

"I'm sorry I frightened you," May said gently. She was a couple of feet taller than they were, and no doubt the experience of turning a corner and nearly colliding with a gigantic alien being, even one as lovely as May Loreen, had nearly finished them.

"We are the ones who must apologize," said the Validusians. "You are the Earthwoman?"

"Yes, I am."

"You are exactly as they said you were!" they exclaimed. "Even beyond the descriptions we received!"

"Why, thank you," May said, flattered. "How sweet of you."

She noticed that the aliens still weren't coming very close to her. They looked like a couple of timid hobgoblins, huddling together near the wall.

But one of them said, "We were on our way to visit you when we—ah—met so abruptly."

"To visit me?"

YES, TO VISIT her. It turned out that the pair of Validusians had a proposition for her.

They were Validusian movie producers, of all things—specialists in tridims. Ordinarily they dealt through underlings, but this was so important that they had come personally to attend to it. What they wanted, as they explained out there in the hall, was to star May in a movie they were making.

May said, "Well, I'll have to discuss this with Mr. Seferiades—he's my agent..."

"Will it take long?"

"It all depends," she said.

They were very anxious to get her services. So anxious, in fact, that they named a sum beyond rational comprehension as her fee. It sounded to May like the Terran global budget for an entire fiscal year. Even as I think about it now, I have to admit it was a devil of a lot

of money: the biggest single offer we had ever received, as a matter of fact.

May was awed by the offer from the two Validusians. She was so awed that she excused herself, went dashing back to my bedroom, woke me up, and poured the whole story in my ears.

"And they're offering fantastic money, Nick, *fantastic!* But they say they have to film me right away, and they want to know if it's okay. What do you say, Nick? Isn't it tremendous? All that money!"

They tell me that I opened my mouth and made a couple of incoherent sounds, and immediately dropped back into my alcoholic stupor. I wish I knew what those sounds I made were.

WHATEVER they were, May Loreen took them as an affirmative. She didn't bother consulting a lawyer. She didn't bother consulting anyone. She signed the contract, the first time she had ever signed a contract without my consultation, and then she went downstairs for the dress rehearsal.

Three days later, with the Fair in full swing, I woke up sober, finally. May told me all about the contract she had signed. She told me all about the check they had given her. She told me all about Validusian movie techniques. It seems the Validusian producers were in a hurry, and they had filmed their May Loreen sequences while I slept.

As she talked, May watched my expression changing.

"But—but—you said it was all right for me to make the film!" she protested.

"*I* said? Me? I've been doped up on Denebian joy-juice all week. I didn't approve anything! I don't know anything about this! May, do you realize you may very well have signed yourself into bondage on this planet for the rest of your life? You—you..."

I fell back against my pillow, gasping for breath. A movie had been made. With May Loreen in it. And it had all been done behind my back.

I sobbed like a baby.

YOU KNOW most of what happened after that. The two glib little Validusian pro-

ducers got their film out in record time. The translation from Validusian is kind of awkward, but they tell me the name of the film is *"The White-Skinned Hideous Horror From A Distant World."*

Yeah. A monster movie.

Starring May Loreen. As the monster.

When I found out what the score was, I did my best to buy up the film. I offered untold millions for the film, the negative, the prints, even the studio. No go. The Validusians weren't selling. They had a fortune in those film-cans, and they werent parting with it.

So *"The White-Skinned Hideous Horror From A Distant World"* is the biggest money-making hit of all time, even though there have been scads of imitators in the six years since it was made. The film is still making the rounds of the distant galaxies; the enthusiastic promoters are peddling it in Andromeda now, I hear.

The gimmick is that to the Validusianoid race, there's no more hideous sight than a Terran. We look even uglier to them than they do to us. On first sight, a Terran scares the bejeepers out of one of them. And it's the same on thousands of worlds.

Those two Validusian producers were brave beings. They almost jumped out of their skins when May turned that corner. But they stuck to their guns and they got what they wanted.

They made the greatest horror film of all time, it seems. People queue up for miles to get into the theater, and when May appears, dressed in a revealing swimsuit that leaves very little to the imagination, it really rocks them. Hundreds have died of heart failure while watching the film. And still they go. They love it.

WELL, YOU see what happened to us. Word got back to Earth fast that the paragon of Earthly beauty was a loathsome monster to half the universe. I never saw a bubble deflate as fast as May Loreen's. She got out of the mess with a bank account up in seven figures, and managed to marry a childhood sweetheart and vanish from the public eye as fast

as she could. Last I heard she was living in the Procyon system and had just had twins.

Me? I haven't dared to go back to Earth yet, and I'm not going to. Half the people think I was gulled into letting her sign, and the rest think more rightly that I was out of commission while the Validusians sold May a bill of goods. Either way I look bad. So I salvaged a good hunk of my earnings and here I am on Zeno XII amid the palm-trees.

Why am I here? Simple. There's a local law that prohibits the showing of motion pictures on Zeno XII. There are also no beauty contests here. As time goes by, maybe I'll forget the whole thing. But I doubt it. Somehow I'm never going to live down the fact that in the distant reaches of the universe beings are gaping and screaming in marrow-frozen terror as the lovely form of May Loreen, the fairest flower of Terra, crosses the silver screen.

The Pity of the Wood

(*continued from page* 20)

all the others in the star ship. When he was away, she shut herself up, trying to gain strength from solitude. On the Wood, people did not live close together.

He checked into a rest cube for the temporarily unbalanced, swallowed the tranquils.

She could receive but not send. She could be hurt, but not hurt in return. An injury to another was an injury to herself.

She had pitied his insensitivity. The Wood had pitied them, both.

Tob rocked on toward sleep. She was beyond anguish, her own and his. The gold-brown eyes were empty. When he waked from tranquil sleep, the tragedy would seem old and half forgotten, a thing that happened long ago.

★

Editorial

YESTERDAY'S WORLD OF TOMORROW: 1928 VI

T. O'CONOR SLOANE frequently entered a plea for the reader's tolerance of necessary poetic license when an author (or the editor, or both) was brought to task for an obvious scientific error in a story. And it goes without saying that such license had to be extended to A. Hyatt Verrill's novel, "The World of Giant Ants", which was featured in the Fall 1928 *Amazing Stories Quarterly*. These were the days when novels were genuinely novel-length; the story runs to at least 80,000 words. Dr. Henden and his associate, seeking out the legendary remains of Tupec, in South America, find their object. Accidently trapped in the ruins of a temple, they find a secret passageway which leads into an unknown valley—where insects grow to enormous sizes. (The expansion is uniform; all the insects common to that part of the continent are present, and the relative sizes are in correct proportion.)

If you can overlook the fundamental impossibility, for the sake of a good story which has no outstanding nonsense otherwise, this makes fascinating reading; and it is, in fact,

a very fine bit of pedagogical science fiction. The author knows his entomology. The only flaw otherwise is in the character of Tom, Henden's Jamacian associate, who consistently talks like something out of Uncle Remus. Since the story is told in the first person, Dr. Henden is depicted, in Paul's illustrations, as very much like Mr. Verrill himself in appearance.

With careful revision of Tom's conversation, and a brief forward in which the fundamental impossibility is explained (the reader asked to imagine what it would be like if we suddenly found ourselves in a world of giant insects) I think this would make a very fine juvenile today. In a sense the absence of pseudo-scientific mumbo jumbo in explaining the giant insects is a virtue. My own feeling is that this sort of "poetic license" is acceptable *providing the reader is told in advance just what in the story is "license", and why it is impossible.* What remains unacceptable is the story about producing giant insects.

DR. KELLER'S "Stenographer's Hands" made a solid impact at the time, and still packs a punch today. This tale of breeding a virtual "race" of stenographers, and conditioning them so that they will be incapable of being anything else—never have the desire to be anything else—precedes Huxley's "Brave New World", I believe. While Watson's "Behaviorism" has been pretty much exploded, there are still various aspects of it that, sadly, are by no means impossible; and Dr. Keller was the first in magazine science fiction to explore some of the distasteful possibilities. Despite dated aspects of the tale, it still leaves the reader with something of the feeling of horror that the author intended to convey. I, for one, am sorry that it was not included in that very fine collection of Kelleranía, "Tales From Underwood". (Arkham House, 1952). Of the many stories which have used this basic theme since, I cannot recall any (outside of Huxley) which did substantially more with it than Keller, or which did it as well.

The editorial for this issue,

written by Jack Williamson (whose first story would appear soon) reflects the illusions of the time.

> And science goes on, with scientifiction as the searchlight. Here is the picture, if we can but see it. A universe ruled by the human mind. A new Golden Age of fair cities, of new laws and new machines, of human capabilities undreamed of, of a civilization that has conquered matter and Nature, distance and time, disease and death. A glorious picture of an empire that lies away past a million flaming suns until it reaches the black infinity of unknown space, and extends beyond. The picture is incredible to us now....

Science-worshipped-as-a-god soon becomes Science-dreaded-as-a-devil, when the god fails to fulfill its worshippers' expectations, as all false gods must. But Science never should be regarded as either; and today's science fiction is doing its part when it depicts human beings regarding science as the useful tool it is within its limitations—neither misusing it for destructive self-service, nor regarding it as the key to heaven-on-Earth. Science fiction is as far off the mark as the Utopia-illusionists were in former decades when it depicts science as a Frankenstein's monster.

THE NOVEMBER and December 1928 issues of *Amazing Stories* were the first I ever owned and read, and both sport covers which look delightfully "amazing" even today. The November one shows explorers emerging from their space-ship onto the surface of Ganymede, looking up at mighty Jupiter in the sky.

There were the days before the spacesuit was invented in science fiction. The explorers (male and female alike) are dressed in shirts and breeches that fit into puttees. The sky is nice and blue; the trees, grass, and shrubbery green, and Jupiter casts its light upon a purple sea. The December cover makes no pretense at being other than fantastic. An aviator is firing futiley at a huge, apparently animate crys-

tal (with eyes) that is descending upon him, giving forth radiations and long red filiaments suggestive of the jelly fish. Except that they are strong enough to lift him from the ground. Across a red stream, we see strange columns with red and green light issuing from them, and the sky is green. The scene is from Jack Williamson's first-published story, "The Metal Man", which is a fantasy on the order of Merritt's short pieces. (Except that there's no woman interest.)

IT'S RATHER disheartening to find that there is very little worth mentioning in these issues. An exception is Dr. Keller's "Psychophonic Nurse" —a robot; the story deals with the psychology of the "career woman" who has no time for her child, and who depends on the latest scientific gadgets to relieve her of the vocation of motherhood.

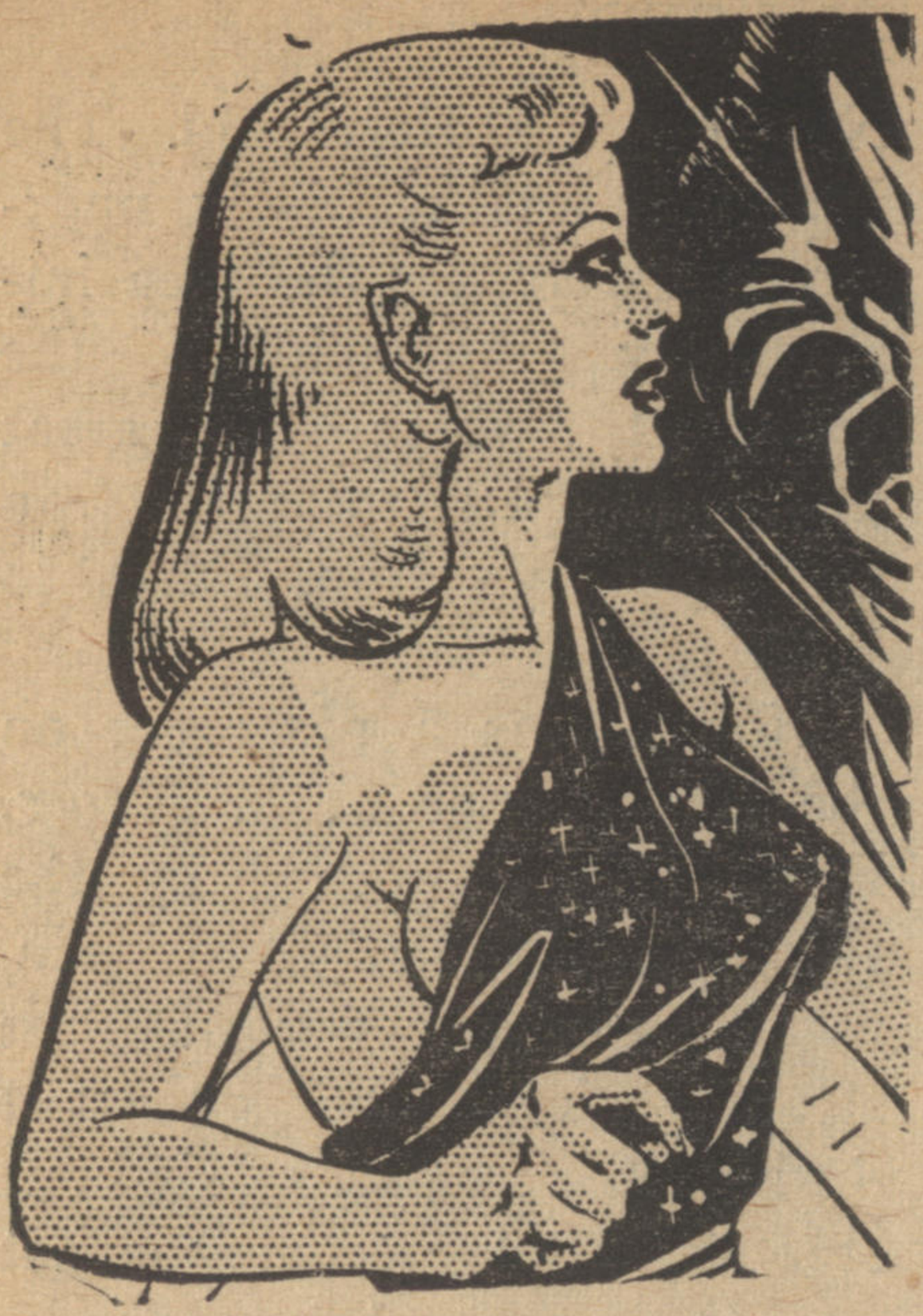
In W. Alexander's "The Ananias Gland" we find that mendacity is due to the functioning of one of the ductless glands; a habitual liar goes to his doctor for an operation, which is a little too successful. Thereafter, he is incapable of saying anything which he knows or believes to be untrue. At the end of the story, a second operation adjusts everything nicely, and our patient has acquired the reputation of being eminently truthful but is actually capable of "necessary" social deceit.

Nonsense, of course. For outside of "pathological liars", the decision to deceive or not to deceive another is a function of the will. We can't pass the buck to our glands, etc., without deceiving ourselves—another exercise of the will.

In the December issue, Edwin K. Sloat's "Flight To Venus" uses the plot where the lead is expected to make a flight to another planet, but decides to land up in the north woods somewhere, stay there for awhile, then return with a fake story. Accidently, he finds himself unable to carry out his plan, and really goes to Venus. Can you finish the plot? Right —when he comes back, no one believes him, because news about his originally-planned doublecross leaked out.

1928 in magazine science fiction started out, as we have seen, with the Verne and Wells reprints still occupying most of the pages. In the last five issues of the monthly magazine, however, there was only one reprint—"The Moth", by Wells. One novel was outstanding, E. E. Smith's "Skylark of Space"—and I hope I've made it clear that, notwithstanding the many faults to be found in it, I consider "Skylark" a first class story. A shorter novel, "The World At Bay" by Bruce and George C. Wallis, was enjoyable reading. Dr. Keller contributed several short stories; and it should be borne in mind that the less-good ones were better than the average new short science fiction story of the time; the best ones set a standard, and we felt cheated when the good doctor's latest story didn't seem to be up to it.

New ideas were wanted all the time, new themes. And since the policy was to extend a great deal of "poetic license" to authors, many of the "new ideas" were far from sound. New authors were wanted; and since the policy was to concentrate upon the pedagogical aspects first, the standards of plot, character treatment, and writing suffered. The ensuing years would show improvement in plot and story-line at the expense of science or of ideas, or both—although neither were deliberately ignored by the editors of the time. RAWL



Her feet were bizarre — wide and flat, with thick bottoms, apparently to cope with the sharply-cindered surface of Halfworld. But above that, Howell thought, she was magnificent ...

FROSTBITE

by Richard Wilson

AL HOWELL first saw her as she lay on a flat rock overlooking the plain. She was an eerie-looking specimen, he thought, with her hair flowing upward from her head as if it were electrically charged. Her feet were bizarre, too—wide and flat, with thick bottoms, apparently to cope with the sharply-cindered surface of the Halfworld.

But in between, Howell thought, she was magnificent.

He couldn't judge accurately because of her prone position but she seemed to be as tall as he was—six feet plus. Naturally she was no sylph. Her anatomy was generous,

excessively human. Nor, from what Howell could tell at the distance, was she wearing much besides her hair.

She hadn't seen him yet. He walked a little faster, then slowed down because he was getting lightheaded.

It was his pace, not his prostate, which had made him giddy; the oxygen supply in the spacesuit was limited by the suit's design. The covering which protected him from the icy temperatures of the Halfworld was a thin, colorless plastic which fitted over his head, hands and clothing as invisibly as a contact lens over an eye and with as little bulk. But this advantage was offset by a tiny oxygen unit which gave him little more than the minimum needed. It was so tiny that it fitted into his cap together with the heating unit.

Thus Al Howell, out for a stroll on the Halfworld, appeared as casual and unencumbered as a young man roaming an Indiana meadow on a summer day.

HE HAD NO business being out strolling, of course. Not on the Halfworld. The planetoid was relatively unexplored except for the area immediately surrounding the spaceport, where the great liners stopped to refuel on their journeys from Earth to Jupiter.

Howell was a passenger on the luxury liner *C. L. Moore*. He had been warned by the skipper and the flight surgeon, as all passengers were, against straying from the spaceport during the vessel's six-hour stopover. But Howell was not one to be bound by conventions; that, in fact, was why he was en route to Jupiter.

Howell's penchant for women, liquor and gambling, and the consequent scrapes they got him into, had mortified his terribly rich relatives, none nearer to this orphan playboy than a first cousin, and the very proper Howell family took action. A delegation of business-world Howells made him a man-to-man proposition. If he would take the next ship to Jupiter, change his name, and not come back for twenty-five years they would give him five million dollars outright. Howell accepted on the

spot and took his scandalous self off the face of the Earth.

Thus he became a Twenty-first Century remittance man, with a fortune to squander and a rake-hell, rebellious young ego to squander it on.

So far as Howell had known, the Halfworld was uninhabited. So he was pleasantly surprised to find this excitingly unsuspected female lolling on a rock, gazing at the plain below, her chin propped up in her hands.

HOWELL picked his way carefully across the frosty, cindery ground. The closer he went, the more exciting she looked. By now he had accepted the upflowing hair as exotic, and he avoided looking at her huge feet.

Howell's own foot dislodged a pockmarked piece of slate at the top of a rise and the girl looked around. She made no move other than that turn of the head. Her eyes regarded the man calmly.

"Hi," he said. His voice went by radio beyond his invisible spacesuit, but whether she could hear him without a receiver he did not know.

Nevertheless the girl looked interested; that was the only emotion apparent on her wide face. She sat up, but made no reply.

He saw now that she was wearing a pink garment of some sort. It was a flimsy thing, certainly not enough to keep her warm—nor, for that matter, to provide more than token concealment of her ultrafemininity. She could be wearing a sheer spacesuit like his, he thought. The oxygen and heating units could be hidden in that massive updo of her hair.

But he hadn't seen her on the spaceliner. Even with her hair hidden under a hat, and her feet under a cocktail table, he couldn't have mistaken her for one of the few Earthwomen he knew to be aboard—mostly dried-up, over-age ladies Howell had investigated on the off chance that one of them would be interesting.

Nor was the girl a Jovian. There were two males from Jupiter in the *C. L. Moore*, but they were so short and round that it was inconceivable their female counterparts could look anything like this.

HOWELL had no idea who she was; nor did it matter particularly. It was just this sort of lack of inquiry into the background of his female companions that had got him dispatched to the system's farthest inhabited planet. All that interested Howell was that this was a woman. A woman-plus.

He had to slow down again when he found himself panting.

The girl got to her unfortunate feet and walked toward him. She smiled now and moved her lips. Howell heard something musical, like a jazz clarinet played in a low register. He stopped entirely, still trying to catch his breath.

The girl continued to move toward him until they were only a handclasp apart. From the ground to the crown of her red-brown hair she stood six-feet-six but her eyes were on a level with his. She placed the palm of her right hand on her breast and then touched Howell lightly on his chest.

Not only was Howell not breathing properly, but now his heart was pounding in his ears. "Baby," he said, "you're terrific."

He imitated her chest-touching gesture and saw her laugh to the accompaniment of a gurgling clarinet passage.

If she was wearing one of those plastic spacesuits it certainly wasn't apparent.

HOWELL, encased in his own, wondered what to do next. She answered his indecision by taking his hand and walking off in a direction opposite to that of the spaceship, whose nose was just visible over the top of the miniature horizon. Howell went along with her with only the briefest of backward glances.

The girl walked at a good pace, her overlarge feet easily navigating the loose surface. Between gasps for breath Howell studied her. The face was striking; it was no more unearthly than that of a ballerina made up for Stravinsky's *Firebird*. Her body was similarly out of the world, yet akin to it.

At the moment Howell didn't care if he never again gambled or took a drink.

They were going uphill. The sky was a studding of diamonds against black forever-

ness and their path was bright under the stars.

After a while they came to a cave with a tall entrance. It should have been dark inside but the passage was luminous, as if from the walls themselves. They walked on, deep into the heart of the hillside.

It became warmer, Howell thought, although that could have been only the pressure of her hand in his.

She spoke to him intermittently during their dreamlike journey, in her wordless clarinet-throb. He didn't know what he was saying to her. If anything, it made only a special kind of sense, like a jazz cornet worrying its way through an opening chorus en route to a stabbing, confident climax.

AT LENGTH, they reached a room—it could be called nothing else—where the walls broadened and the roof heightened and the floor was covered with a kind of soft, amber-colored fur.

A portion of one wall, close to the floor, glowed with a more intense luminescence and piled before this glow was a thick cushion of furs.

Now, as Howell sat on the furs beside her, he was quite warm. He perspired and the drops of sweat between his skin and the plastic spacesuit tortured him. He removed the suit in a decisive zip while the girl looked at him levelly and the music of her voice grew louder and more inviting.

He felt no cold.

IN THE HOSPITAL ward of the *C. L. Moore*, the flight surgeon looked up from the unconscious body of his patient.

He asked a corpsman: "Where was he?"

"They found him at the edge of the spaceport, sir. He was lying there all doubled up, as if..."

"As if what?"

"It sounds kind of silly, sir. But he was stiff from the cold and the position he was lying in... Well, sir, it looked as if he'd frozen while somebody was carrying him in his arms."

"Hmph," the flight surgeon said. "What somebody? There's nobody on the Half-world except the servorobots, and they're not conditioned to

do anything but refuel the ship. Besides, who could live here? It's cold enough to freeze the ears off a brass monkey."

He looked again at Howell, motionless under the sheet that was drawn up to his chin.

"I know, sir," the corpsman said. "But it's all I could think of."

"Furthermore," the flight surgeon said, "he got his frostbite before he was carried back to the spaceport—if he was carried. The entire front of his body is affected. It's as if—well, as if he'd been embracing a cake of dry ice."

Howell's face was pale but a smile of utter contentment was frozen into it.

"He'll recover," the flight surgeon said. "But it's the damnedest case of frostbite I've ever seen."

The Reckoning

AN EDITOR'S life is full of surprises. We thought you'd go for Robert Randall's novelet, "A Little Intelligence" — and you did. Over 50% of your votes put it in first place or marked it "outstanding" (better than just "best in the issue"). Of the rest, one voter thought it least good, and one voter disliked it.

But the surprise, for us, was your reaction to Russ Winterbotham's "Variable Constant". We thought it a good story — you thought it far better than that, as nearly 50% gave it top rating — either along with, or instead of, the lead novelet; and it, too, received a good percentage of "outstanding" designations. Two voters thought it the least good in the issue, but none noted "dislike" for it. The statistics below show how close it came to the Randall tale in your approval.

1. A Little Intelligence (Randall)	1.68
2. The Variable Constant (Winterbotham)	1.76
3. Fueling Stop (Knox)	3.05
4. The Last Paradox (Hoch)	3.63
5. Boy (Wilson)	4.10

READIN' and WRITHIN'

BOOK REVIEWS by Calvin M. Knox

THE THIRD LEVEL, by Jack Finney. Rinehart, $3.

Jack Finney earns his living writing fiction for the slick-paper magazines like *Good Housekeeping* and *Cosmopolitan*—so it's reasonable to assume, almost by definition, that any collection of his short stories will be marked by craftsmanlike construction and graceful writing, since this is what the high-paying markets demand. But most slick copy is also typified by a vacuity of approach, an absence of viewpoint, and here is where Finney's work differs from the usual *Saturday Evening Post* assembly-line narrative: he has a view of life, and it shows in his work.

That view of life is a nostalgic, almost Bradburian one; life was good in the Old Days—defining the Old Days as that period thirty to fifty years back, when life was one long summer evening—and we have somehow gone astray today. The majority of the twelve stories in *"The Third Level"* are escapist in the sense that characters and author seem to prefer any other time, any other place, to contemporary America. It's a note that is also found in such major sf writers as Simak and Heinlein, and in such minor ones as Robert F. Young—a longing for the land of boyhood.

Six of Finney's dozen stories are time travel yarns of one sort or another; of the rest, one is a pure Probability Zero vignette ("Cousin Len's Wonderful Adjective Cellar"); one

is a non-fantastic suspense story, not altogether successful ("Contents of the Dead Man's Pocket,") and two are coy and tepid slick-magazine love stories, sentimental and—to me—irritating by their presence in an otherwise fine book ("Something in a Cloud" and "A Dash of Spring").

One of the remaining stories ("Behind the News") is the old one about the newspaper whose stories keep coming true; it's handled lightly and agreeably enough here, but at least three earlier treatments—most notably Tony Boucher's 1943 "We Print the Truth"—surpass it. The other story, "Of Missing Persons," is about a travel agency that sends people off to another world where life is simple and serene, with all modern comforts, but without radio, television, telephones, or automobiles. Though technically it is a space-travel story and not a time-travel one, spiritually it is akin to the six time-travel stories that are the meat of the collection.

These include that classic yarn of Civil War aviation, "Quit Zoomin' Those Hands Through the Air"; the excellent world-of-if story "Second Chance," with its keen love for old autos; "Such Interesting Neighbors," in which the development of a time machine in a sharply-depicted world of the future causes depopulation; "The Third Level," a slight but evocative nostalgia-yarn; "I'm Scared," which states Finney's main premise baldly and openly on its last two pages; and "There is a Tide," the story of the plump middle-aged ghost who wears rimless knickers.

All these are gentle, effective stories. A reader raised on the pulps might object that a few of them are underplotted, and they are—but all are smoothly, deftly told, convincing, entertaining. Finney is not afraid to show characters rebelling against today's society, nor does he hide the fact that he himself is unhpappy with the way things have gone. The stories in *"The Third Level"* are good rainy-day stuff; four or five of them are as sound a bunch of time-travel stories as anyone has written.

CITY, by Clifford D. Simak. Ace Books, 35¢.

Ace has performed a signal service by restoring to print the long unavailable Simak *City* stories—which first appeared, seven of them, in *Astounding* between 1944 and 1947, along with an eighth and much weaker story printed in, of all places, *Fantastic Adventures* in 1951.

The *City* stories tell of the decline of man—beginning in the near future and moving on, by large jumps, into the distant epochs when man has quit the Earth and his place is taken by intelligent dogs and ageless robots. In these stories Simak's essentially simple, punchy style and his deep nostalgia for yesterday blend perfectly with his theme to provide what is undoubtedly his best work, and just about anybody's best work in this field—a picture of tomorrow so believable, so original, and so clearly depicted that the book has to be called classic.

Everyone has his own favorites among the *City* stories; mine are "Desertion," more concise than most of Simak's, the story of an ill-fated Jupiter exploration; and "Huddling Place," second of the eight, which probes the psychology of our unhappy descendants. But this personal preference has nothing to do with the unity of the book; it all holds beautifully together, each story growing out of the one before it. Simak has bound the eight tales by adding an amusing commentary between each, supposedly the work of the sentient dogs who inherit the Earth; the commentary parodies present-day Biblical analysis in a magnificently funny way.

Plaudits to Ace for making this book available again in this handsome new paperback edition. Certainly *City* is high on anyone's list of all-time top tens of s-f, and new readers who missed the earlier editions of the book are in for a treat this time around.

THE BLUE BARBARIANS, by Stanton A. Coblentz. Avalon Books, $2.75.

Once again Avalon has exhumed a museum piece from

sience fiction's paleozoic era—a Coblentz satire of 1931 vintage. Like other Coblentz novels of the era (*"Into Plutonian Depths"* or *"In Caverns Below"* or half a dozen others) it follows the time-tested Swiftian technique of throwing its characters into a broadly-sketched alien environment for purposes of slapstick satire. And, I suppose, this story of Terran visitors to the improbable civilization of the planet Venus is as good as any of the other Coblentz novels, though if you've read one there's little need to try a second; the mixture is as before.

In this case, though, comparison of the original 1931 version with the hardcover edition reveals that a considerable bit of modernization has been done, resulting in a streamlining down from about 90,000 words to about 50,000. An enormous clotting wad of padding has thus been stripped away; but what remains, though it's bouncy and fast-moving, is remarkably thin and trite.

Not that satire *per se* is a Bad Thing in science fiction—few literary forms have better opportunities for social criticism—but it seems to me that this book has remarkably little to say to the world of 1958. Great satire is timeless, as Jonathan Swift has proven; merely good satire must be linked to a specific time, and this is not. A satiric s-f novel of today like Sheperd Mead's *"Big Ball of Wax"* has point and power; *"The Blue Barbarians"* has neither, only a capacity for producing wan smirks.

And the modernizing process is doubly futile; it shows the book nakedly as not of our time, and it destroys whatever historical importance the reprint may have. If we are to have 1931 s-f novels brought to life, let's have them in all their marvelous mustiness—not stripped down in this fashion. The Avalon edition gives us a magnum of old wine compressed into a shiny new pint-sized bottle, and, amusing though the novel may be in its slapstick way, it's hard to find many good reasons for recommending it to contemporary readers. Somehow there's a

kind of magic in the 1931 edition, with its pages and pages of detailed description and explanation, that has gone out of the chrome-plated 1958 version.

THE MIDWICH CUCKOOS, by John Wyndham. Ballantine, $3.50. No paperback edition.

This is the fourth novel to bear the byline "John Wyndham," the others being *"The Day of the Triffids,"* *"Out of the Deeps,"* and *"Rebirth"*. Wyndham is actually the veteran English writer John Beynon Harris, whose first science fiction works appeared back in 1931 in *Wonder Stories.*

The central situation in this latest Wyndham novel, which Ballantine has dignified by handsome hard-cover packaging, is a startling one. A force-field descends suddenly over the sleepy British hamlet of Midwich, and for twenty-four hours the town is cut off from all contact with the world surrounding, while its inhabitants are unconscious. When they wake the next day, a considerable change has been effected in Midwich life: every fertile woman in town, married or otherwise, is pregnant!

Eventually the children are born, and turn out to be curious golden-eyed babies who exert an uncanny influence over the people of the town. They rapidly develop, reaching adolescence in about nine years, and their true nature is revealed: they are superbeings, capable of controlling humans. They are linked mentally by a sort of gestalt. They are, in short, a Menace To Humanity.

Wyndham's prose is exceptionally literate, his style witty, light, and urbane, his characters well-rounded and individualized. But the book, despite these undeniable distinctions and felicities, is flawed and dissatisfying. For some reason Wyndham has chosen to employ a first-person narrator, thereby winning the 1958 award for Most Useless Technical Device of the Year. His narrator has no part to play in the story whatever, and, in fact, is forgotten for the bulk of the book, which is related

not only in third person but omnisciently as well.

More serious than this minor technical irritation is the fact that Wyndham never really comes to grips with the consequences of his startling situation, despite the assurance of the blurb-writer that he does. He glides smoothly and unconvincingly over the havoc a mass pregnancy of this sort would wreak in a small town—with spinsters and young virgins, widows and wives equally affected by the sudden fructification. Somehow the inhabitants of Midwich take the occurrence pretty much in their stride, proffer a stiff upper lip, and go on as if nothing out of the ordinary had happened. True, they *seem* to be disturbed at first, but Wyndham never gets deep into the situation.

What's more, the world at large hardly appears to care about what has happened in Midwich. A mysterious Military Intelligence man is on stage throughout much of the book, and, nine years after the event, reveals that Midwich has been under observation all the time—but the bald statement will not wash. If any such mass pregnancy were to take place anywhere in the Western world, the scene would be chaotic, with reporters, investigators, religious men, and any number of others on hand to find out the cause. As Wyndham sets it forth, not even the people of the neighboring towns show much interest in the event.

What results is an entertaining and amusing book, smoothly written and capably presented, whose only failure is that the central premise is never made believable. In essence Wyndham has written an up-to-date version of the familiar British "thriller," substituting urbanity and charm for villainy and deception, but remaining true to the old canon of implausibility nevertheless.

★

★ ★ ★

DOWN TO EARTH

LETTERS to science fiction editors are not tossed into the wastebasket or dropped into a drawer for some vague future reference; no, they're all read if the editor can possibly puzzle them out. Comments on stories, artwork, etc., get careful attention; and when the reader has listed the stories in his order of preference or given any clue as to which stories he prefers, these votes are tabulated on our master chart of reader-reaction to the issue. Whether your epistle bristles with wrath, or praises us so heartily that we suspect a forthcoming touch for a loan or some special favor, we meditate upon it. And when we find something which seems like a concensus, we try to act upon it.

WHAT, NO PORTFOLIO?

Dear RAWL:

Have just finished the August issue. My favorite was "The Earthquake Remedy". "Object Lesson" was second best. The others were also enjoyable. I think the cover was the best you've had on the digest size. There are two types of covers I really enjoy—aliens and alien terrain, and when they are put together like this one they are twice as good. Why hasn't Emsh—the best SF artist (at least I think he is) —gotten together a portfolio?

What's this "Dear Mr. Lowndes" stuff in the letter department? Lord, it sounds like the readers are writing to the

President of the U. S. instead of a friendly SF editor. RAWL sounds nice and friendly (so did "Doc.", but those days are gone) and that is as it should be between reader and editor.

Another question: Where do you get the information for the "Science Fiction Almanac"?

"The Space Age Magazine" sounds good as a heading. Keep it. Hope next issue is as good as this one.

TED PAULS,
1448 Meridene Dr.,
Baltimore 12, *Maryland*

The editor tries to steer a middle course between formality and familiarity in this department, which accounts for the wide variety of salutations you see on the letters. Generally speaking, we use the greeting that the letter-writer has used. This also accounts for the shuttling between use of the formal editorial "we" and the plain "I". Perhaps uniformity would be in order, eh?

The question is not "Why hasn't Emsh...gotten together a portfolio?" but "Why hasn't someone published an Emsh portfolio?" For this, we have no answer; but we agree that the project is a worthy one, and hope that someone will undertake it.

Source material for the "Science Fiction Almanac" included the editor's private collection of fantasy and science fiction magazines; the Bradford Day chart in his "Index to the Weird and the Fantastica"; and the editor's memory. The correction published in our October issue is proof that he should not rely upon the final item when it is possible to check it against other sources.

We hope that you found the October issue as good as the August issue, if not better. Conditions being what they are in this far-from-ideal world, the editor's minimum aim is to have each and every issue so ordered that each and every reader will find at least one story outstanding—the best in months. But we doubt that any editor would be satisfied at achieving the minimum; his maximum aim, of course, is for each and every reader to find every story in each and every issue outstandingly good. This is impossible; but it is only when the impossible is attempted that the range of the possible can be extended.

Don't Forget
to send your ballot into
THE RECKONING

NO SUBSTITUTE

Dear RAWL:

Okay, I'm the only dissenter on "The Woman You Wanted", so maybe I was giving you base motives that didn't actually exist when I accused you of publishing it just so you could have a sexy title splattered on top of a girlie cover. I still think it was a lousy story, though; and the rating it received makes me wonder just how many of these fans who blithely criticise "the *Saturday Evening Post* type of story" ever actually read the *Post*. (Because that was a *Post*-type story, and an inferior one at that—if I ever saw one—though the *Post* would have used a more conservative title and illustration.)

Anyway, in issue No. 38, give the No. 1 rating to "The Last Threshold", which is the best story you've published in several issues. No. 2 spot goes to "The Earthquake Remedy", which was excellent up to the ending. Actually, it didn't end at all; it just stopped, presumably to make room for the sequel. "Texas In The Sky", "Object Lesson" and "The Song" get places 4, 5, and 6, respectively—nothing particularly bad or particularly outstanding about any of them... two weeks from now, I won't even remember their titles or what they were about.

Cover, sort of average work for Emsh. Why don't you use Orban on the cover once in awhile? Or get one by Ebel? This Emsh and Freas business gets monotonous—their work not only all looks alike, but they're beginning to look like each other.

Article was only fair this time, editorial wasn't as good as usual, and Jay Tyler is a poor substitute for damon knight (*anyone* is a poor substitute for damon knight, for that matter). I'll keep on buying the mag, though; it's still one of the diminishing number of *readable* stf magazines.

ROBERT COULSON,
105 Stitt Street,
Wabash, Indiana

But now, alas, I fear we'll have to do the best we can with substitutes for damon knight, since his present commitments will not allow him to do book reviews for us.

EDITORIAL APPROVED

Dear Mr. Lowndes:

Your editorial in No. 39 is most encouraging. For a long time, I had supposed that the very best one could hope from a science fiction editor would be a certain objectivity and veracity in the presentation of disputed questions and some recognition that there were readers of science fiction who wanted just that, and not propaganda against religion or morals. Now I am very much pleased to find that you are not merely indifferent to, but even positively in favor of moral standards in the selection of matter for publication. I am enclosing a check for $2.10 for a year's subscription. I have previously bought many science fiction periodicals at newsstands, but this is the first time that I ventured to subscribe, so please don't let me down!

I appreciate your having printed my letter on Logic which appeared in No. 33, without any censoring or editing. I would like to add a word or two in recognition of mathematical logic, since some of your readers may be interested to know that there is a remarkable application of mathematical logic in an article appearing in the July, 1958, issue of *The New Scholasticism*, an analysis of the proof from change (motion) for the existence of God in the writings of St. Thomas Aquinas. The article is translated from the Polish of Jan Salamucha (1903-1044), extraordinary professor of philosophy of Jagiellonian University in Cracow, and it is accompanied by several pages of biographical notes on the author. Perhaps I may venture to quote two sentences from the article itself:

> Mathematical logic, although it is a comparatively young science, provides us with many new and subtle tools for exact thinking. To reject them is to adopt the attitude of one who stubbornly insists on traveling by stagecoach, though having at his disposal a train or an airplane.

I am always glad to eat humble pie when it serves the interests of truth, so I would like to retract one point of my previous letter: I take back

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by Koller Ernst

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The January issue is now on sale

what I said about "such caricatures of (Logic) as are found among mathematical texts."

Regarding the features and fiction of No. 39, I enjoyed "*Fueling Stop*" most for originality and humor, and I also—as may be gathered from what is said above—highly approved of the editorial. Speaking of originality brings me to another point I want to say something about. Perhaps I should imitate Marian C. Oaks and break this up into two letters!

What particularly annoys me about the whole literary situation is a triad of vices which I shall refer to as *feedback, contamination,* and *breakthrough*. By *feedback* I mean the novel about the successful novelist, the movie about a movie star, etc. By *contamination* I refer to the miserable contagion by which any original and striking idea of one writer or cartoonist is immediately adopted by all the others so that it is as if all the cooks had mixed up all the soup in the world in one big caldron. By *breakthrough* I mean that sophisticated vice of referring to the actual work of fiction within the story itself in such a way as to destroy the illusion. I could go on but I don't want to wear out your patience.

ALAN C. BATES,
922 W. Fullerton Ave.,
Chicago 14, Ill.

Thanks for the encouragement; I hope to justify your faith in me, as well as that of all other readers.

I agree that what you call "feedback" has been overdone, but not that it is necessarily bad in itself. With "contamination", I agree without question, since *development* of someone else's ideas is another matter entirely; and while what you call "breakthrough" might be justifiable in very rare instances, there is no justification for it most of the time.

BREAKDOWN

Dear RAWL:

I have finally read up my pile of science fiction magazines, and find to my surprise that I have finished the October issue of *Future* in time to rate the stories and have the rating sufficiently current (as to date of publication) to be of some possible use. Therefore, forthwith:

"A Little Intelligence" (Robert Randall)—A.

The collaboration of these two authors, each good in his own right, has produced a most charming and interesting tale. No stereotype people here. I fear, however, that the incident of Vor Gontakel asking Sister Mary Magdalene "This means what?" when Felicity says a few feline utterances is a trifle too obvious. The Sister's line of reasoning becomes too evident too soon before the climax. Oh well, I suppose that if the incident had been "hidden" any more deeply, the average reader would not remember it at all. This story certainly fits one of the definitions of science fiction to a T. I doubt seriously that the theme could be made particularly interesting or believable as a pure "earthbound" story. The whole thing hinges on the presuppositions as to the aliens' sensory responses and their social problems.

"Fueling Stop" (Knox)—3rd place. Rating—4 on your scale.

The whole thing seemed too familiar to me. Besides, I just

[*Turn Page*]

do not believe that so complex, important, and expensive a machine as the Mark V Portable Astrocomp would ever be handled so casually as is depicted, or that its designers would ever incorporate the heterogeneous features depicted. By the way, how did you get the story and your cover illustrations to match so closely? Or is this a deep, dark trade secret?

"The Variable Constant" (Winterbotham)—2nd place. Rating—3 on your scale.

This one struck me as being a little too flat and contrived. Maybe I expect too much in the way of character development for this length of story, though.

"The Last Paradox" (Hoch)—Dead last. Rating—X.

The halls of the castle of science fiction still ring endlessly to the abysmal cries of "And (he) screamed (and screamed)..." Sorry old bean. This one does not please. Interesting turn on the time-travel paradox, however.

"Boy" (Wilson)—4th. Rating—2 or 3 on your scale.

Well written, but I felt that it just wasn't worth the trouble.

"It's All How You Look At It" by Isaac Asimov seemed too "fanny" for my taste. I certainly am in sympathy with the thought, though. I have enjoyed your series on "Yesterday's World of Tomorrow: 1928" very much. My interest in science fiction goes back quite a spell, but not that far.

And now to shed a tear for the passing of "Captain Video!" I trust I will not be stoned in the streets for my feelings about this estimable character. I wonder just how many people the dear Captain influenced into investigating the realm of science fiction? I personally know of several people (adults, and not morons, either) who were staunch fans of this television series. These same people would also never touch a science fiction magazine with a twelve foot pole, either. If we may dwell on the subject of characterization for a spell, let us look at "good old Tucker." Here was characterization! Hammy, yes, but thoroughly enjoyable, yes?

ROSS. B. McMULLEN,
52 E. Oak Grove Drive,
Baltimore 20, Maryland

There are three possible ways in which a story and a

[*Turn Page*]

★ Readers' Preference Coupon

Did you like the cover? _____

_____

Shall we continue the "Yesterday's World of Tomorrow" series of editorials? _____

_____

Your own question or comment now: _____

_____

(You'll find space for story ratings on other side)

cover illustration can be made to match with admirable exactness. One is to get the artist to absorb the story so thoroughly that what he paints will fit the scene perfectly. Another is to let an author absorb the painting and instruct him to write a story in which that scene is described so faithfully that it looks as if the artist had done a perfect job of illustrating the story. The third way—having a story revised to fit a cover—can also get the same results, but we've abandoned that line of attack. It's too likely to louse up a good story. So any cover you see from us where the correspondence between text and cover is notably good comes from one of the first two devices listed above; and the second is used more often than the first.

I think you've put your finger on what is my main objection to movies or shows like "Captain Video". It's not that they're hopelessly bad, or that they cannot be enjoyed by a person of reasonable intelligence. Of course they can, if they're good jobs on their own level. But to the uninitiate such offerings provide a misleading conception of what science fiction—all science fiction—is like; and too often, the end-result is that people may enjoy something like "Captain Video" but decide that science fiction isn't worth reading. RAWL.

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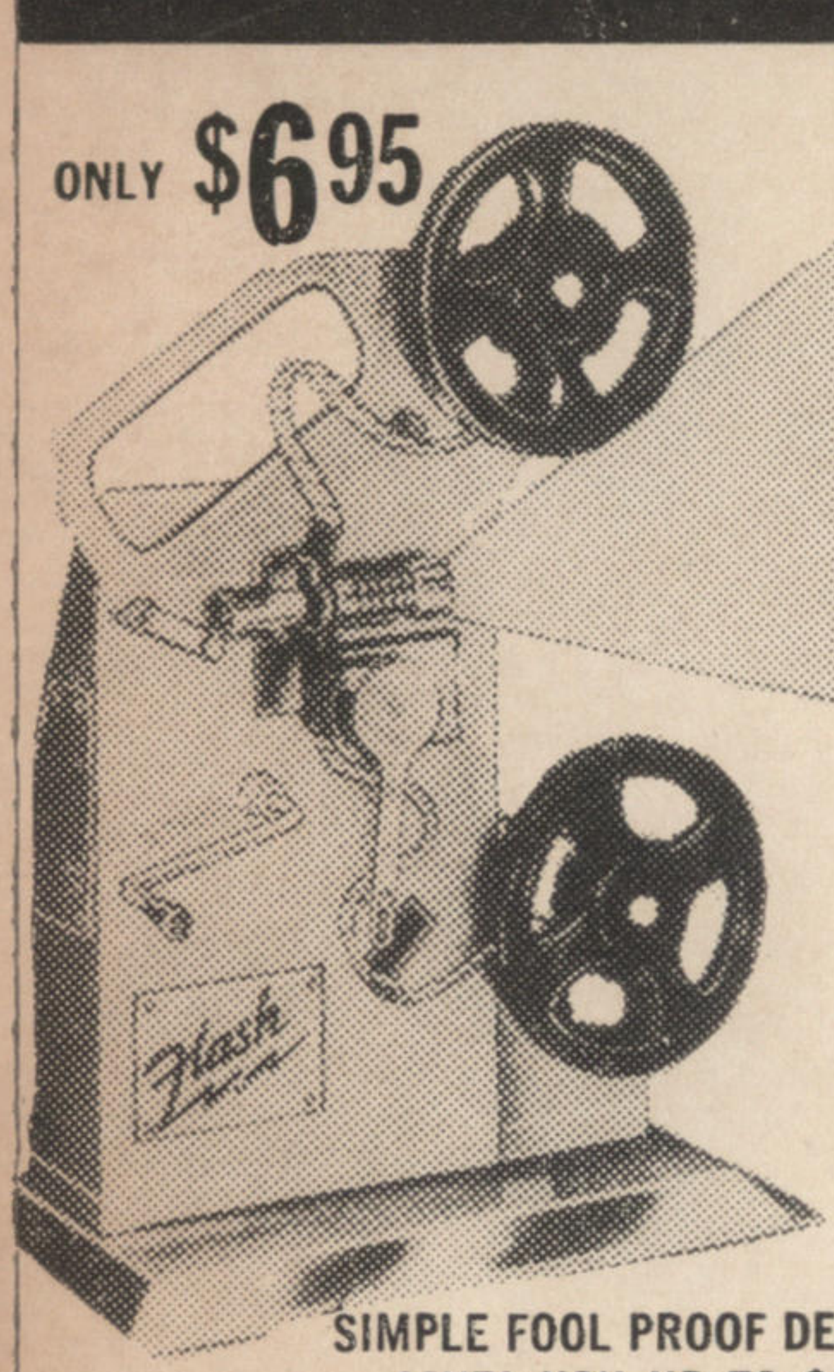

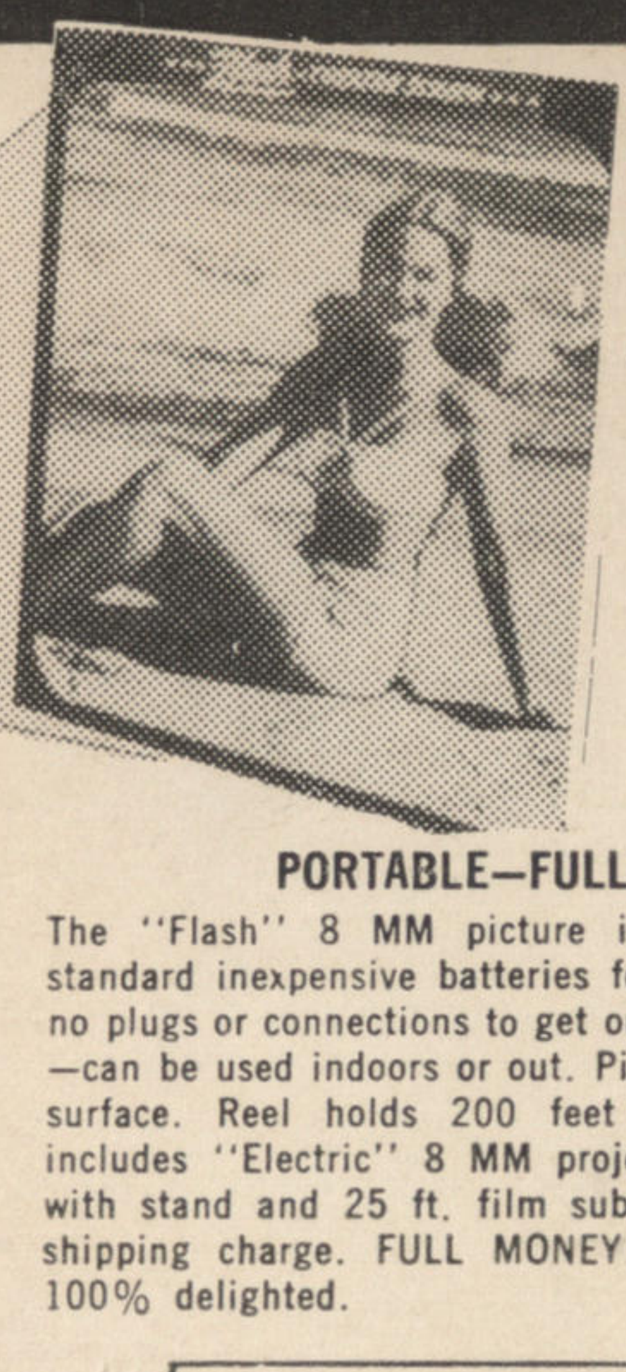

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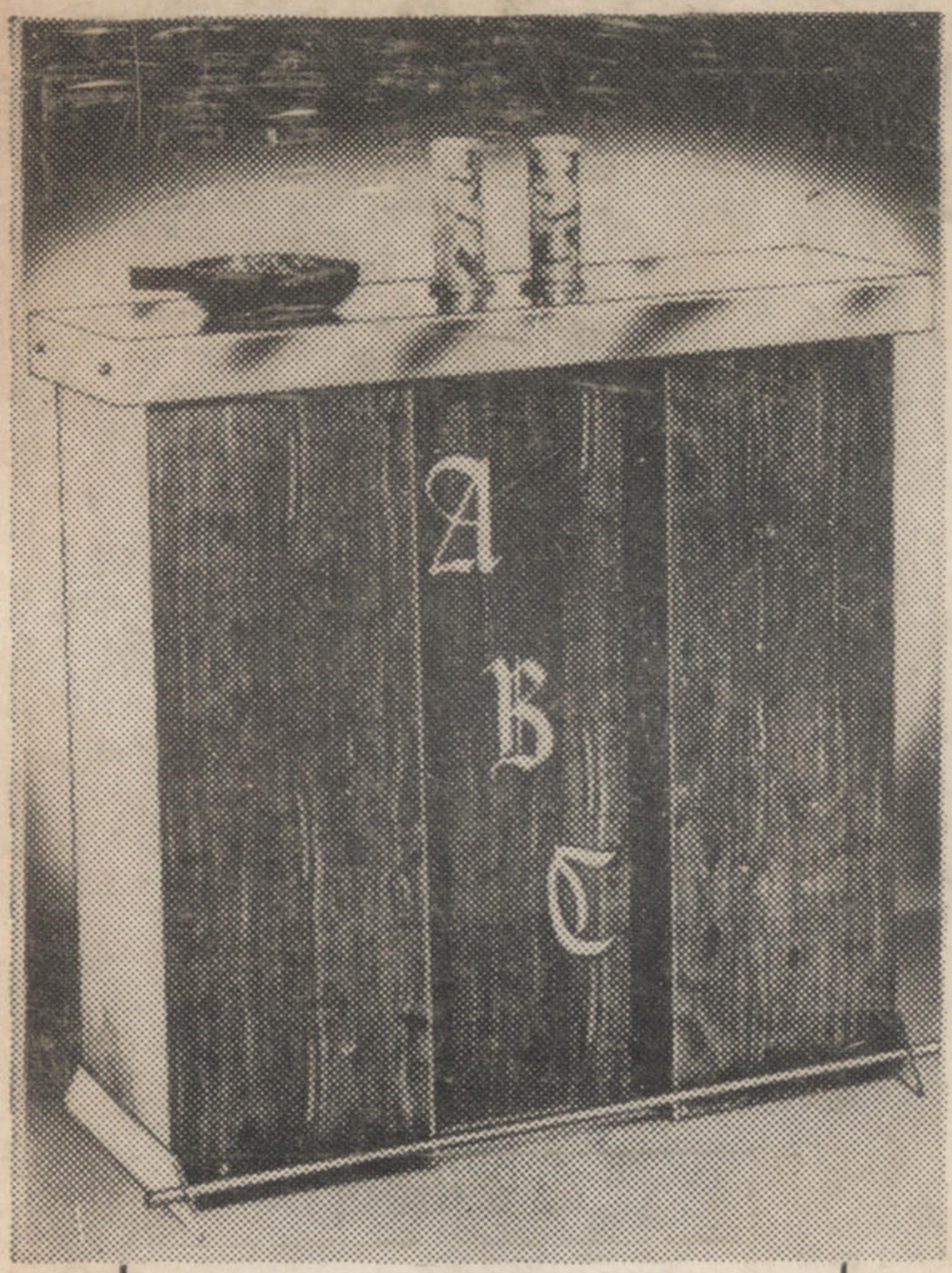

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