

WORLDS OF
SCIENCE FICTION

FEBRUARY 35 CENTS

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IN THIS ISSUE! Frank Riley's provocative short novel **ABBR.!** Also Arthur C. Clarke, James McConnell, Bryce Walton and others

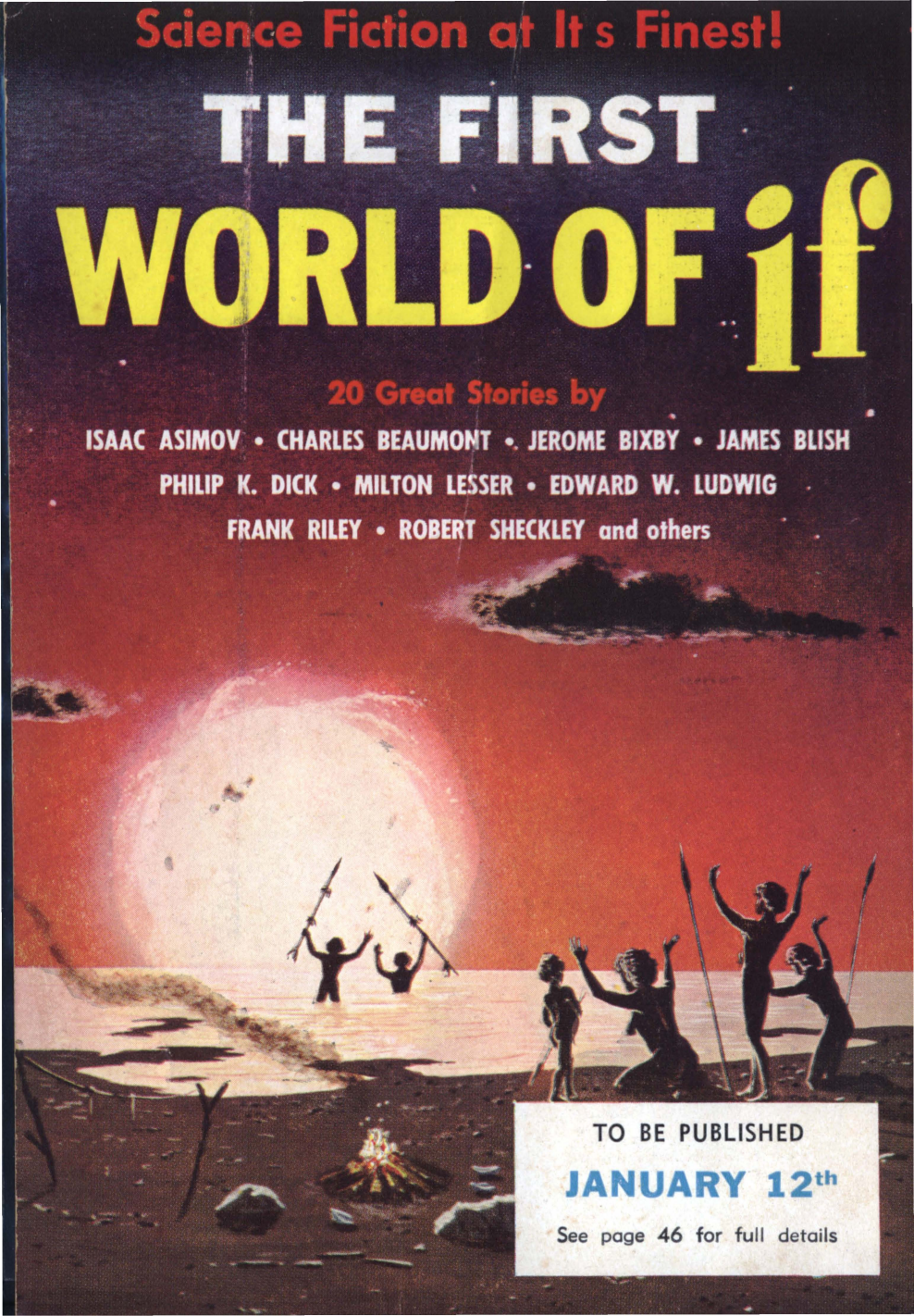


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TO BE PUBLISHED

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WORLDS of SCIENCE FICTION

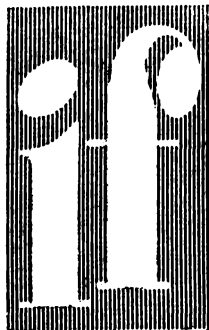
FEBRUARY 1957

All Stories New and Complete

Editor: JAMES L. QUINN

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Editor's REPORT

With this issue, IF is five years old, and the question that seems to have popped up most frequently during that time is one concerning its title. Some folks aver that IF isn't the best title a science fiction magazine could have. Others express the opinion that it is a good title. Neutrals ask: "Why did you call it IF?"

At the 14th World Science Fiction Convention in New York the subject came up and one of the best known artists in the field remarked that IF had more science fiction "guts" than any other title. It was a flattering remark. Yet, with more truth than we realized at the time. For when you really think about it for a while, IF *is* science fiction! For instance, any science fiction story you read is really: "What would happen *if*—?" A sound philosophy, a logical extrapolation and good writing provide the imaginary answer. An imaginary answer, a fictional answer—but an answer that gives us some of the most stimulating and entertaining reading we have today, reading that

provokes thought and presents some fascinating new concepts about Mankind of the Future.

Thus, we always come back to *if*. What would happen *if*—*if* the human lifespan was increased to 150 years, *if* the awesome power of nuclear fission got out of hand, *if* telepathy or electronics or semantics were ever developed to the ultimate, *if* space travel became an everyday event, *if* the integration of nationalities, languages, races, creeds and colors became a reality — *if* anyone of the myriad sciences were projected a hundred or thousand or million years into the future?

Dr. Alan E. Nourse's PROGNOSIS FOR TOMORROW arrived just in time to make this issue. The theme is "medicine at the crossroads" and it examines, in the light of progress of yesterday and today, the expectations of the future. We found it to be completely fascinating, an article of equal interest to members of the medical profession as to lay readers. Don't miss it . . . Henry Slesar, who makes his first appearance in these pages with **THOUGHT FOR TOMORROW**, is another who does science fiction in his spare time. A newcomer to the field and a young man just under thirty, he has been earning his living at the typewriter since he was 17 years old. With five years out for time in the Service, most of it has been writing advertising copy. At present he is vice president of a New York advertising agency and lives in Manhattan with his wife and daughter, a little girl almost

two. He claims a collection of records that would be the envy of any jazz lover . . . Charles Fontenay (See October issue) recently made national news when he won first prize at a Nashville art exhibit—with a wipe rag for his brushes. When I wrote him about it, he replied: "It's one of the funniest things that ever happened to me . . . The whole thing started when one of those Nashville abstract artists got control of a statewide exhibit here early this year, and threw out 150 of 250 paintings entered, leaving in only the abstracts. One of those thrown out was mine, and I didn't get my entry fee back. I was painting something at the time, and slapped my excess paint on an old canvas and angrily told my wife, 'That's exactly the sort of stuff that gets blue ribbons nowadays. I'm going to enter that in the state fair and win first prize.' I went through with it—and it did! . . . The abstract artists who infest Nashville are madder than hops, which tickles me no end."

Bryce Walton who has appeared often in *IF* (with *HAPPY HERD*, *THE CHASM* and others), is one of the most prolific writers in the general fiction field. To date he has two books, a hundred television shows, numerous articles, and over 500 short stories, novelettes and short novels to his credit. He writes under his own name (Bryce Walton) and 12 pen names.

Born in a one-room farmhouse in an isolated section of Northwest Missouri, May 31, 1918, his only

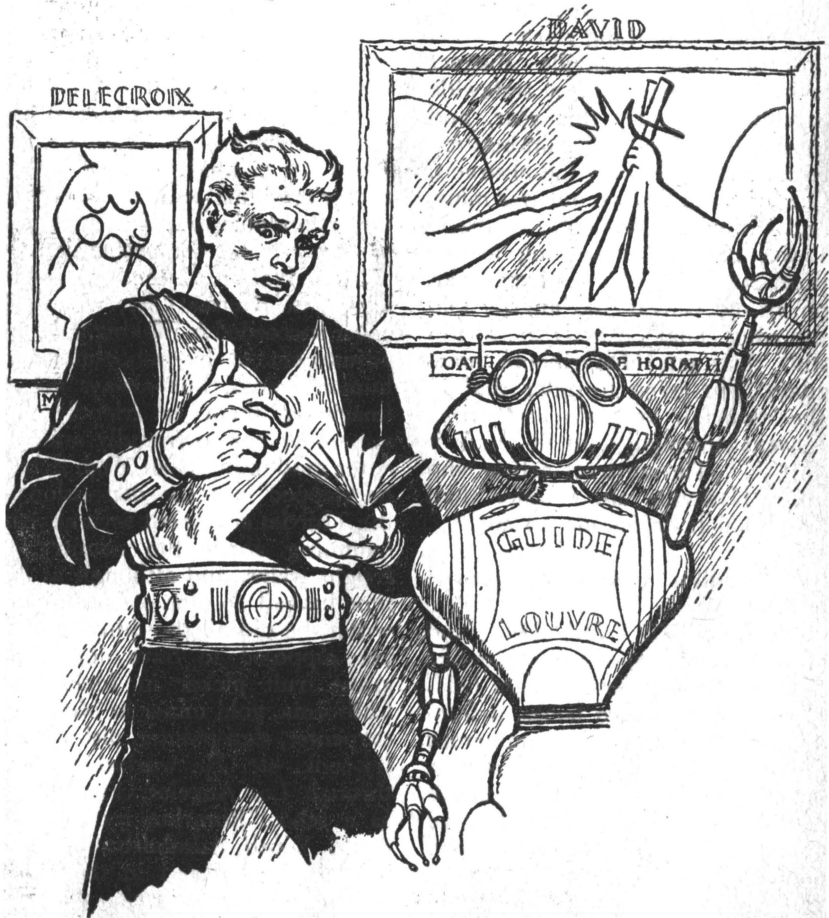
playmates until the age of nine were horses, cows, pigs, dogs, birds, chickens and snakes. He grew up in an imaginative world of his own in which he fantasied the animals as being people and vice versa. This confusion remains with him even today and, he says, contributes to his continuation as a writer. He does not feel that any character he has ever seen in the world of fiction, literary or otherwise, has but a faint resemblance to the people he meets in real life. He is convinced that fictional characters are created to carry out an author's whims and are therefore understandable, but that real people are beyond comprehension.

Mr. Walton attended public school in Kansas City, where he never succeeded in making a decent adjustment to his schoolmates as human beings, but always got to imagining them as friendly and sometimes not so friendly animals. After graduating from High School he stepped into the depression of the Thirties and spent several years bumming about the country on freight trains, and although at this time he had no idea of becoming a writer, he did all the things writers are supposed to have done—migrant fruit picker in Idaho and California, gold miner in Montana, carpenter, sign-painter, dishwasher, fry-cook, etc. He worked his way through Los Angeles City College as a school librarian for the National Youth Administration, and in 1941 he enlisted in the U. S. Navy. He became a writer when he wrote such a stirring portrait of the

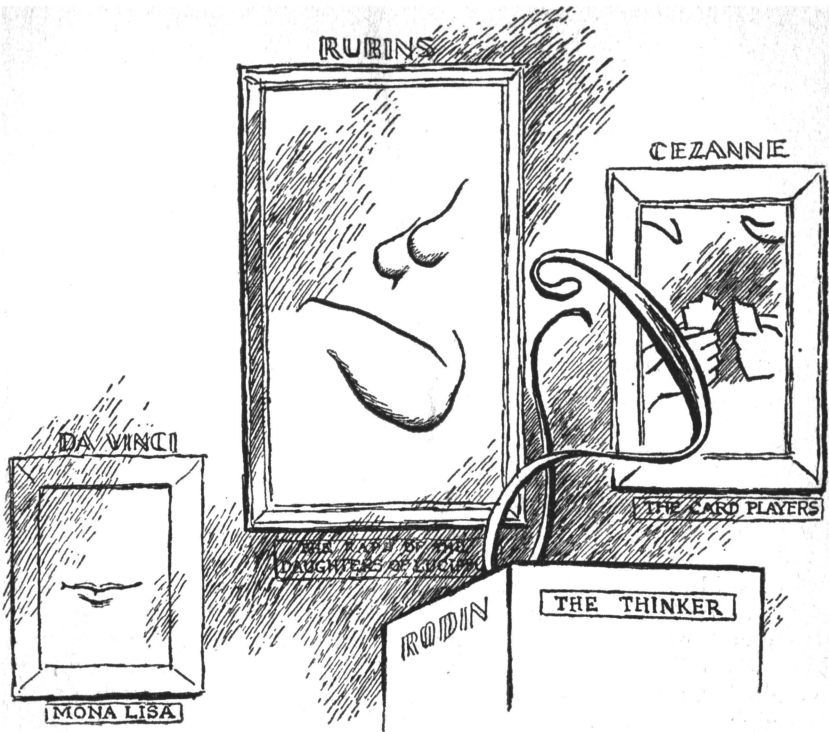
(Continued on page 120)

Brevity was the new watchword.

Vrythg dgstd stht lsrcdb nryd.



Illustrated by Ed Emsch



Abbr.

BY FRANK RILEY

WALTHER VON KOENIGSBURG woke up a few moments after the earth shuttle had passed Venus. As he gazed back at the lonely, shrouded planet, abandoned long ago when Man won freedom to colonize

more habitable worlds in deep space, Walther realized that in just a matter of minutes his long pilgrimage would be over. Soon he would walk down the ramp and set foot on Earth—the almost mythical homeland of his people. Walther was young enough, and old enough, not to be ashamed of the sudden choking in his throat, the moisture in his eyes.

A light touch on his shoulder brought him back to the shuttle ship. The pert stewardess smiled at his start.

“Wyslgsr,” she asked pleasantly.

Or at least that’s what it sounded like to Walther, whose ears were still ringing from the take off at the Cyngus III shuttleport.

“I beg your pardon,” he began. “I’m afraid . . .”

For a moment she looked startled, then her full, red lips parted in another bright smile.

“Oh, I’m sorry!” she exclaimed. “I didn’t realize . . . I just asked, Sir, whether you had been sleeping.”

She spoke with the mechanical, stilted perfection he had first noted when transferring from the Aldebaran liner at the shuttleport. He had wondered, briefly, about the source of the accent, but had been too polite to ask.

The stewardess put a small pillow in his lap, then placed a tray on it. The recessed compartments of the tray held a cup of steaming black coffee, a piece of pastry that reminded Walther of apfelstrudel, and a paper-covered booklet entitled: “Easy Earth Dictionary and Orientation Manual”. Stamped on

the cover, in the manner of an official seal, were the words: “Prepared under the authorization of Happy Time, Ltd.”

“Thank you,” said Walther, then he grinned buoyantly, eager to share these moments of excitement at being so close to Earth. “But I don’t think I’ll need the dictionary!”

Tiny frown lines appeared between the stewardess’s carefully arched eyebrows.

“Hg su’v rthsr?” she inquired uncertainly.

“I don’t understand . . .”

The stewardess managed a professional smile that was edged with just the faintest touch of impatience.

“That’s what I thought. What I asked, Sir, was how long since you’ve been on Earth?”

“This is my first visit!”

“Then you had better study the dictionary,” she said firmly.

“Oh, no, I really don’t need it!” Walther’s inner excitement showed in the flush of his fair Nordic complexion. He turned toward her in a burst of confidence. “You see, my people always kept alive their native languages. My father’s side of the family was German . . . and down through all the generations they’ve managed to teach the language to their children! It was the same way with my mother’s family, who were English . . .” Pride came into his voice: “I could speak both languages by the time I was four.”

“And you’ve never taken this shuttle from Cyngus?”

“I’ve never been on Cyngus before—nor on Aldebaran VI—Den-

eb II—or Arcturus IX,” explained Walther, naming the farflung way station across the galaxy. He added: “I’m on my way in from Neustadt—Andromeda, you know.”

Respect replaced the hint of impatience in the stewardess’s smile, which instantly became more personal. Not for generations had a colonist from the Andromeda galaxy boarded this shuttle; the Andromeda run, across 1,500,000 light years of space, could be made only by special charter, at a fantastic cost. This blonde young man with the stubborn chin and sensitive mouth was obviously a colonial of tremendous wealth.

The pilot’s buzzer sounded, and a red light flickered on the Passenger Instruction panel.

“I have to go forward now,” the stewardess said, regretfully. “We’re entering the warp, and it’s time to prepare for landing. Maybe later . . .”

She let the invitation trail off, and left him with a very special smile.

Walther understood the smile. He was a young man, but he was no fool. In the trading centers of Andromeda many women smiled at him that way when they learned he was a Von Koenigsburg from Neustadt.

He dunked the pastry in the black coffee, took a generous bite and settled back to be alone with his thoughts. An earth woman was not an essential part of the dream that had taken him on this quixotic voyage. True, there might be a woman who would come to love him enough so that she would leave

the old world culture and graciousness of Earth for the colonial life on the immense frontier of Andromeda. But, being of an age where the dreams of youth are merging with practicality, Walther rather doubted he would find such a woman.

He didn’t doubt that the rest of his dream would come gloriously to life.

While the shuttle whirled without motion through the voidless void of hyper space, Walther smiled at the prospect ahead. Six months to immerse himself in the wonder of Earth’s culture! Six months to enjoy the whole of it, instead of nourishing the few precious fragments kept alive by his family through the first centuries of colonial life in the new galaxy.

Delightful evenings at the symphony and the opera! Beethoven, Verdi, Brahms, Shubert and Wagner! Wagner!—Perhaps he would even be able to attend a performance of *Die Meistersinger*. Walther smiled to himself. His great, great grandfather, who had first discovered the incredibly rich mines, forests and black loam of Neustadt, had started the tradition of naming the first son Walther, after the whimsical *Meistersinger*, Walther von der Vogelweide.

Then there would be leisurely afternoons in the great libraries and museums! All the great classics of literature and art, instead of the few faded pictures and the handful of volumes in the high beamed library of his family castle. The infrequent ships that traveled between the fringes of the two gal-

axies had little room for books and art treasures. Three years ago, on the occasion of Walther's twenty-first birthday, his mother had broken down in tears as she told of trying for half a decade to order a set of Goethe as a coming of age present for him. But after the request had finally reached Earth, some clerk had garbled the order and sent a four-page booklet that apparently was some kind of puzzle-book for children.

Now he could steep himself in Goethe, Schiller, Dickens, Maupassant, Tolstoi!

And best of all the conversation! The delicate art of communicating mind with mind! What tales he would have to tell when he sat again in the family banquet hall! How his mother's eyes would sparkle! How his father would roar with delight as he recounted some rapier-like *bon mot* . . .

But all this was only the small part of the dream. The small, personal part. The dream itself was so much bigger, as big as a dream must be to carry over from youth to manhood. He had first dreamed it as a boy, sitting on the hearth rug with his knees tucked up under his chin, watching the great leaping fire, while behind him in the shadows his grandfather played on the old violin. *Meditation*, his grandfather had called it. By a long ago composer of Earth, a man strangely named Thais. His grandfather couldn't play very much of it, but the fragment had lodged in Walther's heart and would be there to the end of his life.

Walther's dream was indeed a

grand dream, shaped of a melody and leaping flames. He would not spend his lifetime wresting more wealth from the riches of Neustadt. That had been done for him; the challenge was gone. But someday he would make the journey to Earth, and bring back with him enough of the beauty and culture to make Neustadt a miniature Earth, out on the rim of Andromeda.

It was indeed a grand dream. He would spend his wealth for books and music and treasures of art. He would try to bring back artists and teachers, too, and from Neustadt would spread the wonder of the new, old culture; it would reach out to all the colonies of the Andromeda galaxy, giving texture to life. And it would be there like a shining beacon when Man made his next great step across space, across the millions of light years to the Camora galaxy, and beyond . . .

The stewardess again touched his shoulder, with a gesture that was not entirely according to shuttle-ship regulations.

"We're through the warp and are now in orbit," she said. "We'll land at Uniport in three minutes."

Uniport! The fabled entry port of Earth! It was the new hub, the pulsing heart of the homeland. It was the syndrome of all Earth culture, and its stratoways reached out like spokes of a spidery wheel to every city of the planet.

Walther's knees were a little shaky as he moved down the ramp, and the moisture in the corners of his eyes was not caused by the sleety December wind that whipped across the vast landing area. He

was on Earth. He was the first of his people to return to the fatherland that had cradled them and sent them out into the universe.

When the stewardess said goodbye to him at the foot of the ramp, she looked both puzzled and disappointed. Her smile had been an invitation, and she had sensed the tug of it in his answering grin. But he only tipped his hat, and went on into the customs office.

He felt like a small boy suddenly confronted by so many delights that he knew not which to sample first.

"Destination?"

The customs officer's blue pencil poised over the question on the Uniport entry form. Walther shrugged carelessly.

"Oh, I'll look around Uniport awhile, then visit other cities . . . New York . . . London . . . Vienna . . . I have six months, you know."

"I know—I'm sure you'll enjoy your happy time. But you must have a destination—someplace where you can be contacted, or leave forwarding addresses." The official's voice was patient, but it had the curious mechanical quality Walther had noted in speech of the pretty young stewardess.

"Can you recommend good lodging?"

"The Uniport landing provides excellent facilities, and you'll be among other travelers until you have a chance to adjust yourself to happy time activities."

"Oh, no! I don't want to waste a moment! I want to live among the people of Earth from this very first night!"

The customs officer peered at Walther's entry permit.

"Andromeda . . . that's what I thought." He shook his head dubiously. "You have your Orientation Manual?"

Walther fumbled in the pockets of his greatcoat.

"I must have left it on the shuttleship, but I don't need it."

The official pressed another copy of the manual firmly into Walther's hands.

"It is required," he said. "First visitors are not allowed to leave the Uniport landing without one."

Walther was too happy to argue. He shoved the manual into one of pockets.

"If I may suggest, Sir," said the customs officer, his eyes widening as he looked over Walther's letters of credit, "You will find the Hotel Altair most comfortable. It's where all important visitors in Uniport stay."

The next few moments went by so quickly they left Walther a little dazed. A servo-robot took his bags and led him to a monorail car, which whisked him off to the hotel.

"Gdegr," said the doorman, another servo-robot, in a brilliant scarlet uniform. Its wax-like features were set in a perpetual smile.

Walther blinked.

"I'm sorry," he began. "I—"

"Thayr," said the majestic robot, taking Walther's handtooled overnight bag and motioning imperiously for two bellhop robots to bring the rest of the luggage. Silent and smiling, they leaped to obey.

The desk clerk was a human, and

greeted Walther with an efficient:
"Wemtalr."

He offered Walther a pen and a registration card on which appeared some undecipherable combination of letters.

Walther began to have a sense of unreality about the whole thing, as if he were still day-dreaming in the Venus warp.

"Really," he said, "I seem to be quite confused—"

With a smile of sudden comprehension, the clerk produced a Manual and thumbed rapidly through its pages. He pointed to a phrase with the tip of his pen, and Walther read:

What price room do you desire?

Opposite these words was the phnetic jumble:

Whprumuier?

Walther shrugged to indicate that price was not important, but his thoughts were spinning. And they were still spinning when the robot bellhop left him alone in his suite. The possibility of a language barrier on Earth was something he had never considered. With only six months planned for his visit, it would be impossible to learn a new language and still do all he had dreamed of doing.

But the Von Koenigsburgs were noted for their stubbornness. Walther's chin set, and he opened the Manual to learn what this was all about.

He promptly realized that this was a Manual only for the most elementary needs of conversation, and that a great amount of study would be necessary for normal discourse. The first section of the Manual de-

voted a short chapter to each of the basic languages of Earth. Turning from one to another, Walther discovered that an extreme degree of condensation had taken place in all languages. It was as though a form of speedwriting and shorthand had been vocalized.

But why? What did it mean?

Walther found a partial explanation in the Orientation section which began:

"Be brief!"

"Soyez bref!"

"Mach' es kurz!"

"Sea breze!"

In a score of languages, first-time visitors were admonished that an understanding of these two words was essential to getting maximum enjoyment out of their stay on Earth.

"Even in an earlier age," the introduction pointed out, "the words 'Be Brief' expressed the essence of a new way of life, a life in which pace and tempo were all important. Later, as technology and automation relieved man of the burden of labor, he realized that tempo was equally important to fullest enjoyment of his happy time hours. You will understand this better after a few pleasant days on Earth."

There was a false ring to the words that heightened Walther's sense of forboding.

Under the glass top of his dressing table, he saw several brightly colored, attractively illustrated notices. One in particular caught his attention. It showed a young woman with lovely and poignantly expressive features. Her hands were outstretched, as though she were

singing or engaged in a dramatic scene.

With the help of his Manual, Walther ascertained that the young woman was named Maria Piavi, and that she was an Italian operatic soprano appearing currently in Uniport with a New York company.

Walther's buoyancy began to return. What better way to become acquainted with Earth's culture than to spend his first evening at the opera? He removed the announcement with Maria Piavi's picture from under the glass and stood it upright against the mirror.

Dinner in the hotel's main dining room was a confusing interlude. The cuisine was superb, the robot waiter faultless—although Walther was beginning to weary of their fixed smiles. But more irritating was the flicker of huge, tri-dimensional television screens on the walls of the dining room. When he deciphered his bill, he saw he had been taxed for the TV entertainment.

After dinner, he showed the opera announcement to the hotel clerk, and asked how to get there. The clerk wrote down the number of the monorail car he was to take, but when Walther learned the opera house was only six blocks away, he decided to walk. The clerk was aghast at this, and followed him all the way to the sidewalk, waving his arms and protesting in an hysterical jumble of consonants.

THE OPERA house itself was a revelation. All he had dreamed of, and more. The frescoed facade!

The dazzling marquee! The crowd of elegantly dressed men and women, animatedly speaking their strange syllables as they watched a floor show in the lobby. When the floor show ended, and the crowd shifted to the far end, where a pantomimist was beginning his act, Walther had a clear view of the life-size cutout of Maria Piavi in the center of the lobby.

He stood in front of it, staring with unashamed admiration. There was an earthiness and warmth about her that reminded him of the young women of his own planet. Paradoxically, there was also an air of remoteness and rigid self-discipline, a sense of emotion eternally controlled. He wondered which was the real Maria. Beside her picture was the photograph of a peppery old man whom Walther was able to identify as Willy Fritsh. The consonants under his name said he was now a producer, and had formerly directed for many years.

Walther purchased his ticket without too much difficulty. The lights blinked, and he followed the crowd into the orchestra section.

As he sank into the luxury of upholstered seat, Walther opened his senses to the sounds and sights about him, the tingling scent of the lovely women, the ebb and flow of indistinguishable conversation, the strange, short bursts of music which he found to be emanating from a tiny, jeweled radio in the purse of the woman who sat next to him.

His excitement and anticipation grew still greater when he carefully deciphered the program and discovered that Maria Piavi was to

sing Gilda, in *Rigoletto*, this very evening. What unbelievable good luck! *Rigoletto*, to commemorate his first evening on Earth! Walther vaguely knew the story of the opera, but from earliest childhood he could remember his mother singing snatches of *Caro Nome* and *La donna e mobile*. Now he would hear the entire arias, the full score of this masterpiece.

Suddenly all was quiet. The orchestra rose swiftly into view in front of the stage. The white-haired leader bowed. There was an eruption of applause, as brief as the crack of a rocket breaking the sound barrier. The golden baton rose, a glorious burst of music filled the opera house and the velvet curtain zipped upward so rapidly that the blinking of an eye would have missed it.

The opening scene of festal entertainment in the hall of the ducal palace was a masterpiece in conception, but the gay cavaliers and ladies, the Duke's twenty-second condensation of the "Questa o quella" ballata, the plotting with *Rigoletto* and the mocking of *Monterone* were all accomplished and done with before Walther knew what was happening.

Then he realized that he was looking upon a tremendous revolving stage, divided into many exquisite sets. Each set appeared majestically, established itself, often with an almost indiscernable pause, and then moved out of view to be replaced by the next.

The second scene was the deserted street outside *Rigoletto's* cottage. *Rigoletto* appeared and disap-

peared, Gilda and the disguised Duke flashed through their duets, the orchestra set up the briefest of fanfares, and the lovely *Maria Piavi* moved to the center of the stage to sing Gilda's immortal aria

"*Caro nome che il me cor . . .*"

The words electrified Walther to the edge of his seat. Here were the first naturally spoken words of the opera, the words of Gilda as she expressed joy at learning the name of her lover. Walther's mother had sung the haunting words on many an evening as he drifted off to sleep in his nursery. But he had never heard them phrased so beautifully as they came now from the lips of *Maria Piavi*. After the numbing shock of the first scene, they started the blood throbbing in his temples again.

But they were the last words he understood of the aria.

Using the archaic phrase with superb showmanship to startle her audience, *Maria* swung with flawless technique into a contraction of verse and music that somehow managed to convey the beauty of both in the few seconds that she held the center of the stage. It was like passing a star just before you entered hyperspace. You saw it for an instant, it awed and choked you with its wonder, and then it vanished into a nothingness that was deeper than night.

There was so much beauty in the fragment that Walther ached to hear the rest of the aria. But Gilda had been abducted to the Duke's palace, and the stage had revolved far into Act II before Walther could assimilate the realization that

no more of "Caro Nome" would be heard this evening, or any evening.

Nothing mattered after this, not even the Duke's half-minute condensation of "*La donna e mobile*". The stage picked up momentum, thunder and lightning flashed, the murdered Gilda's body was discovered by her father in the sack beside the river, the final curtain swooped down over the grisly horror, the orchestra disappeared, lights flashed on and Walther found himself being hurried along with the pleased audience toward the exit, where servo-robots were passing out handbills and pointing to a theatre across the street.

The entire opera had lasted eleven minutes.

Stunned, his dream crumbling, Walther stood outside the opera house and watched the crowd disappear into the theatre across the street, or plunge into passing monorail cars. The wind of the late afternoon was gone. A light snow was falling; it melted on his cheeks and powdered the fur collar of his greatcoat. Some of the younger couples didn't immediately board the monorail. They walked around to the stage exit and waited, laughing and chattering. Walther joined them.

In a few moments members of the cast began to appear. They waved gaily at friends in the crowd.

Maria came out in the company of two young men, followed closely by the peppery, bright-eyed little man whom Walther recognized from the lobby poster as being Willy Fritsh, the producer. The young couples closed around them,

applauding. Walther shouldered his way toward the center of the group.

Maria was laughing with excitement. This was the warm, earthy Maria, not the exquisite, almost aloof, artist Walther had seen on the stage. She was a full-lipped, gay Italian girl who was enjoying the plaudits of her friends. She was bundled in a white fur, and her teeth flashed as she tossed back a rippling comment to one of the young men standing near Walther.

As they started to move away, Walther stepped forward in sudden desperation.

"I beg pardon," he said. "Can you wait while I try to ask one question?"

Maria looked startled, and one of her escorts stepped quickly between her and Walther.

"Whtstywt?" the young man snapped.

Walther flushed at the tone. He wasn't used to being spoken to this way, certainly not by anyone his own age. His jaw set as he held on to his self control, and continued thumbing through the Manual.

Then he noticed that Maria was being hurried along by her other escort. He tried to step around the young man blocking his path.

The young man put out his arm and pushed against Walther's shoulder, as if to shove him back into the crowd.

Out of the corner of his eye, Walther saw Willy Fritsh hurrying forward to intervene. But his own reflexes were already in motion. His left hand flashed up; the back of it struck the young man in the chest. Walther didn't intend it to be a

blow, merely a warning. He even managed to check it before it landed. But, to his bewilderment, the young man staggered back, slumped to his knees, gasping for breath.

The other escort, though white-faced with fear, hurled himself at Walther.

Still trying to maintain a measure of control, Walther merely blocked the second escort by thrusting out the palm of his hand. The young man toppled backward, and the whole scene began to take on a never-never land quality.

Girls screamed in terror; the crowd around Walther scrambled out of his reach. Maria stared at him wide-eyed, but didn't move.

"I'm terribly sorry," Walther blurted.

There was a shrill whistle, a drumbeat of running feet on the cold sidewalk. Walther moved forward to help the young men to their feet. They shrank away from him, and then he was surrounded by three armed police officers, shouting a gibberish of commands.

Finally, Willy Fritsch made himself heard. He pointed to Walther's manual, and spoke a few patient words of explanation. When one of the officers still seemed unsatisfied, Willy turned to Walther with a twinkle in his eyes:

"They want to know if you are a professional pugilist?"

Walther felt immeasurably relieved at hearing these naturally spoken words.

"Good Lord, no!" he gasped.

He took out his entry permits, his identification certificate and his letters of credit, impressively drawn

up on the stationery of the Inter-Galactic Exchange Union on Denneb II.

When the doubting officer saw the amount of the credits, his hands shook and he handed the papers back to Walther as if they were state documents. The officers helped the two young men to their feet, admonished them sharply, tipped their hats to Walther and hurried back to their posts.

Willy regarded Walther quizzically.

"Well, young man, you seem to have very persuasive ways!"

At home, it had been easy for Walther to slip from English to German. He did it now in the stress of the moment.

"Ich kann Ihnen nicht sagen wie leid es mir tut—"

He was in the middle of his apology before he realized he was talking German. He broke off in confusion. Willy's pink cheeks crinkled with amusement.

"Ist schon gut. Ich spreche auch das 'alte' Deutsch."

Willy went on to explain:

"As a young man I translated many of the German masters into our modern happy time presentations. Now, what is it you wanted to ask Miss Maria?"

Walther addressed his question to Willy, but he looked at Maria as he spoke:

"I . . . I wanted to ask if she would ever consider singing Rigoletto in its original form. I would be happy to pay all expenses . . ."

"I'm sure you would," Willy said drily. "But Miss Maria sings only the pure happy time essence of

Rigoletto. Not for more than a century has Verdi's original version been sung on Earth."

Maria looked puzzled during the interchange. Willy translated for her, and she nodded in vigorous endorsement of his words. There was a titter of laughter from the young couples who had crowded around them again.

Walther drew himself very erect. "Thank you," he said.

He turned on his heel and walked into the darkness beyond the stage exit. He walked blindly into the snow flurries, not caring where his steps were taking him. But he had not gone two hundred yards before he realized he was being followed.

WALTHER STOPPED and waited.

The footsteps behind him drew closer. A slight shadow bulked out of the darkness, and Walther heard Willy Fritsh say in German:

"Don't be alarmed, young man."

Willy came up and linked his arm through Walther's.

"Keep on walking— It's a cold night."

The chill air rattled in Willy's throat as he panted from the pace of overtaking Walther. When he caught his breath, he asked:

"What sort of world do you come from? It's quite amazing that someone from the Andromeda galaxy should ask for the original Rigoletto!"

Walther told the old producer something of his home and family. Willy questioned him closely on sev-

eral points, and finally seemed satisfied.

"When they come from the stars," he murmured.

"I beg your pardon?"

"It is nothing—just the title of an old classic."

At the next corner, Willy stopped. "I leave you here."

He stepped closer to Walther and lowered his voice, even though there was nothing around them but darkness and drifting snow.

"Would you care to sample a bit of Bohemia, my boy?"

"Well—I guess so," Walther answered doubtfully.

"Tomorrow evening then, at eight. 1400 Avenue B, apartment 21. Can you remember that?"

"1400 Avenue B, apartment 21."

"I must emphasize the need for discretion on your part. There will be important people present."

"Why do you trust me?" Walther challenged.

"Because I am an old fool," chuckled Willy Fritsh.

The chuckle emboldened Walther to ask one more question:

"Will Maria be there?"

"Now you are a fool!"

Willy took a step away, then returned, flicked on his cigarette lighter and studied Walther thoughtfully.

"Or maybe not," he murmured.

"Maybe not. Perhaps Maria could be there, this once . . ."

He snapped out the lighter.

With another chuckle, Willy disappeared into the darkness.

1400 Avenue B, apartment 21. Eight o'clock tomorrow evening. The directions whirled all night

through Walther's fitful sleep. They intermingled with a strange company of servo-robots, unintelligible phrases, the dry chuckle of Willy Fritsh and the haunting voice of Maria Piavi, beginning an aria she would never finish.

The next day, Walther determined to find out how the cult of brevity had changed other fields of Earth's culture. He went first to the library, where foreboding hardened into bitter reality. Classic after classic was cut to its essence. Hamlet was reduced to a total reading time of seven minutes. But the old librarian seemed embarrassed about this.

By mutual reference to the Manual, she managed to convey to him that a new edition would be out soon, and that it would be edited down to five minutes reading time. Did he want to sign up for a copy?

Walther gave her a stricken look, and silently shook his head.

Puzzled, she led him to the other classics on his list. Each was a new blow. "Great Expectations" was cut to twenty pages, all of Thoreau to one thin pamphlet, Henry James to a pocket-size digest of less than ten pages; "Leaves of Grass" to a few lines of verse.

Walther's sense of loss became more than personal. He saw uncounted generations of boys who would never know Whitman, who might never have time for the open road in the Spring, the sweet springtime of life. The road and the poem, they were part of each other. Without one, the other could not live.

The fire of Walther's dream

flamed up fiercely within him. There was yet time for beauty in Andromeda. Time for quiet and thinking and true leisure. Somehow, he must rescue the treasures of the ages from the tomb of Earth and let them live again, three-quarters of a million light years away.

He beckoned to the old librarian, and laboriously communicated his question:

"The originals of these classics—where are they?"

She frowned in bewilderment. He pointed to the proper words again, and gestured with his hands to indicate a large book.

A smile of understanding replaced her frown. She consulted a larger edition of his own Manual, and wrote:

Digester's Vaults—lower six levels.

He wrote back:

Can I go down there?

After some delay, she encoded the answer:

Only authorized happy time Digesters are permitted in the vaults.

Walther thanked her glumly. His spirits were so depressed that not even the digested version of the Bible shocked him too greatly. The Old Testament amounted to eleven pages, in rather large type; the Gospel of St. Mark was three paragraphs; the Acts of the Apostles spanned less than half a page.

Walther left the library, and the icy wind roused him from depression. It lashed him to anger, to a desperate, unreasoning anger that drove him to find, somewhere on Earth, an ember of the old culture. Somewhere he had to find such an

ember and bring it back to Neustadt, where it would flame again.

He managed to get directions to the Vienna stratowaycar. Surely in Vienna he would find some trace of the spirit left by Mozart and Hayden, Beethoven, Schubert and Strauss.

Ten minutes later, when he left the stratoway in the Platz terminal near the Vienna Ring, his heart beat a little faster. This was indeed the old Vienna, as he had envisaged it from the few pictures he had seen and the many stories he had been told. The buildings on the Ring were in good repair, and not substantially altered. There was the Burg Theatre, the Art and History Museum, the buttressed facade of the ancient Opera House, the soaring twin spires of the Votive Church. It was like seeing an old woodcut come to life.

But, for Walther, that was all that came to life in Vienna. The Burg Theatre was currently presenting Faust, in what was billed as a brilliant new production scaled down to seventeen minutes. Walther sadly recalled Goethe's prophetic line: *Mein Lied ertont der unbekanten Menge . . .* My song sounds to the unknown multitude.

Wandering outside the city itself, into the footpaths of the Wienerwald, Walther tried to lose himself among the gentle slopes and the old trees that cut latticework into the sky. He came suddenly upon the village of Tullnerzing, where, from a tiny sidewalk cafe, music of a stringed ensemble came in short, quick bursts. It was scherzo speeded up a hundredfold, with not three

but an infinite number of quarter notes blurred into what sounded like a single beat.

These were the Vienna woods! How could he ever tell his mother and father? Heartsick, he returned to the Platz and found the Berlin stratoway.

In Berlin, his bitterness grew. He had known the Unter den Linden must have changed through the centuries, but he was not prepared for such a pace of life, such a frenzy of leisure. Better not to have left Andromeda. Better always to have lived with a dream.

The sight of two elderly burghers drinking beer reminded him of his own great grandfather, and gave him a heartening twinge of nostalgia. But as he stepped close to their table, he saw that as they sipped from their miniature steins the fingers of their free hands beat out a rhythmic accompaniment to the convolutions of an adagio team imaged on the table-top television screen.

The final irony came to him when he read the lines of Schiller, carved over the entrance to a museum near the Brandenburg Gate. Because they were cut deep into the old stone, they could not be erased or condensed. They were there to give their ironic message to a world that could no longer read them:

Only through the morning gateway of the beautiful did you enter the land of knowledge.

And beneath them was Schiller's immortal warning to the artist:

*Der Menschheit Wurde ist in eure Hand gegeben,
Bewahret sie . . .*

Walther copied the entire passage on the back of his Manual. This, at least, he could take back with him. These words he could preserve for the artists who would someday create their works of beauty on the frontier of Andromeda. As he copied them, Walther felt that the words were also a personal message from Schiller to himself:

*The dignity of Mankind is placed
in your hands,
Preserve it!*

*Whether it sinks or rises depends
on you.*

*The holy spell of poetry
Serves a wise world order;
May it guide man to that great
sea*

Where harmony prevails.

The words sustained Walther's spirits until he left the stratoway in Paris and went to the Louvre. He had told himself that by this time nothing could shock him, that he could take any blow. But the Louvre was a new shock all over again.

Translating a title with the help of his Manual and the servo-robot guide, Walther found that the thin, wavering line, about two inches long, against a background of misty blue, was the Mona Lisa.

The servo-robot explained, after much searching among its tapes for words:

"This is the spirit of the famous Mona Lisa smile. The Happy Time artist has cleverly removed all non-essential detail so that you can get the meaning of the picture in the minimum amount of time."

Walther studied the thin, waver-

ing line. This, then, was Da Vinci's eternal enigma of womanhood. Perhaps it explained why he felt there were two Marias. Could there be one whole woman in a culture of fragmented lives?

The portraits of Holbein were reduced to a few sprinkles of geometric designs shot through with a single brilliant color. The nudes of Watteau, Rubens and Velazquez were little more than shadow curves.

In the east wing of the Louvre, the servo-robot pointed to a series of larger paintings. Each of these, Walther learned, summarized the entire life work of a single artist. Here it was possible to see all of Titian or Michaelangelo or Van Gogh on one simplified canvas.

Where were the originals of these classics? In the cultural vaults at Uniport, the servo-robot explained. Only authorized Happy Time artists could work with them.

Afterwards, Walther was never quite certain what happened to the rest of his day. Distracted, he wandered around the Earth, changing from stratoway to stratoway, scarcely paying any heed to his next destination. Rome, Athens, Moscow, Jerusalem. Everywhere the pace of leisure was the same. Capetown, New Delhi, Tibet, Tokyo, San Francisco. Everywhere he saw something that crumbled his dream a little more: The Buddhist monk pausing for ten seconds of meditation while he counted his beads, not one by one but in groups of twenty; the World Government Chamber where the Senator from the United States filibustered a proposal to

death by speaking for the unprecedented period of four minutes; the cafe near the school where teenage boys and girls, immense numbers of them, danced, snapped their fingers and shrieked ecstatically as the latest popular record exploded in a wild three-note burst of sound.

It was seven o'clock in the evening before Walther became aware of the time. He was half the Earth and just one hour away from his meeting with Willy Fritsh.

1400 Avenue B, apartment 21.

A bit of Bohemia, Willy had promised him. The words disturbed Walther. He had been disappointed so often in his twenty-four hours on Earth that he didn't feel like bracing himself for another let-down. Nor did he feel in the mood for a gay evening, if that was what Willy had meant.

Would Maria be there?

Walther shook his head angrily. He was indeed a fool if he expected anything after this day.

I 400 AVENUE B was only a few moments by monorail from the Hotel Altair. A gentle-faced woman who reminded Walther of his own mother answered his knock on the door of Apartment 21.

"Kdftc?" she inquired politely.

Walther stared at her. Was this all a cruel joke played by Willy Fritsh? Certainly this elderly woman, this quiet building, contained no Bohemia to be spoken of with discretion.

"Excuse me," he muttered, not even bothering to consult his Manual. He bowed and backed away.

"I'm afraid I've made a mistake—"

She stayed him with a small gesture of her delicate fingers. Glancing swiftly up and down the hall, she beckoned him inside. When the door was closed, she smiled a bright welcome, and spoke in the old tongue:

"You're the young man from Andromeda!"

Walther felt the tension inside him beginning to relax. He nodded, and she took his arm.

"Willy told us—we've been expecting you."

She led him from the small foyer into a large, tastefully furnished living room. Walther glanced around uncertainly, but his first impression proved correct. There was no one else here.

The woman urged him forward with a light touch of her fingertips.

"We must be so careful," she murmured.

She guided him through the living room, past the kitchen and one bedroom, and then opened the door of what appeared to be the entrance to a second bedroom.

This room was unexpectedly large, and contained many people. They were talking with great animation, but hushed abruptly as he entered.

"The young man from Andromeda," his hostess announced.

The dry voice of Willy Fritsh came through the haze of cigarette smoke.

"Over here, boy! Come and sit down!"

He saw Willy and Maria sitting on a long cushion against the far wall. They moved over to make

room for him. Maria smiled rather hesitantly. He sensed she was very ill at ease.

"I'll introduce you around later," said Willy. "Everybody's too keyed up right now. We've just had an unexpected surprise—really quite startling."

The conversation had bubbled up again, and there was an electric feeling of excitement in the air. Everyone was trying to talk at the same time. Cheeks were flushed, eyes sparkled.

While everyone was talking to those nearest, the most constantly recurring focal point of attention was the thin, balding man seated just across the room from Walther, on the arm of the sofa. He was riffling the pages of a pocket-size notebook and smiling with self-conscious pride.

Willy nodded toward the man.

"There's the gentleman who furnished our surprise— He brought shorthand notes on an entire chapter from Don Quixote!"

After the day he had just been through, Walther could appreciate this. He asked wonderingly,

"Where did he get them?"

"He's a Happy Time Digester."

Walther studied the little man. So this was one of the comparative few on Earth who could get into the deep vaults of the Uniport library! What wonders he must have explored! What beauty and adventure, what mind-stretching thoughts he must encounter in those underground catacombs. How deep into the past he could explore, how far into the future! Why, he could range the universe faster than the

warp drive, out even beyond the Andromeda galaxy!

Willy cut into his thoughts.

"He's going to read the entire chapter!"

Walther turned to Maria to see if she shared his excitement. It was the aloof, controlled Maria who smiled faintly at him. It was obvious she had come against her will, and was trying to be gracious about it.

A middle-aged couple arrived.

"Dr. and Mrs. Althuss," Willy whispered. "He's the famous heart surgeon . . ."

The next arrival was a distinguished looking man whose fingers shook with nervousness.

"That's the World Government alternate delegate from England," Willy whispered again. "It wouldn't do his reputation any good for word to get out that he spent an evening in this Bohemian crowd . . ."

Their hostess moved to the center of the room, raised her hand and announced:

"We're all here now. Please go ahead, Lorne."

The room quieted instantly. The thin little man proudly began in the old English:

"Don Cervante at the Castle . . ."

His reading was painfully slow, and he stumbled over the pronunciation of many words. The people in the room watched him so intently, with such absolute concentration, that they gave the impression of reading his lips rather than listening to his words. Frequently, he would have to translate a word or phrase into the new language,

and there would be nods of understanding and relief.

Willy's bright blue eyes sparkled more brightly than ever. He ran his fingers constantly through his thin bristle of white hair. The elderly woman on the sofa beside the Digester was so flushed and breathing so rapidly that Walther feared she was on the verge of a stroke. Even the urbane heart surgeon showed the emotional impact of this experience. His long, tapered fingers were clenched together, and he ran his under lip constantly over the edge of his greying mustache.

Maria seemed the only one in the room who was not affected by the reading. Only a slight tightening of her lips marred her careful composure.

Soon Walther lost himself in the tingling excitement of the room, and he forgot about watching the others. Word by word, sentence by sentence, the Digester led them along with Don Cervante.

The reading, with its many pauses for translation, took almost two hours. When it was over, everyone was emotionally and physically exhausted. The little Digester was so pale he looked ill; his high forehead dripped with perspiration.

Walther drew a long breath, and brought himself reluctantly back to reality.

Willy asked quietly:

"What do you think of our intellectual underworld?"

An outbreak of almost hysterical conversation made it useless for Walther to answer. Maria, with a look of reproach at Willy, moved across the room to speak to their

hostess. Willy lit one of his cigars and leaned closer to Walther. There was a gleam of amusement in his twinkling blue eyes.

"You look more worn out than Don Cervante!" he chuckled.

The contrast between this evening and the disillusionment of the day made it hard for Walther to put his gratitude into words.

"I can't thank you enough—" he began.

"Don't try," said Willy. "I may have had my own devious reasons for inviting you." He glanced toward Maria, who was making an effort at polite conversation with the hostess. "I'm afraid our young diva isn't an ardent admirer of the unexpurgated Don Quixote"

There were many questions Walther wanted to ask about Maria, but he tactfully inquired, instead:

"How often does this group meet?"

"Whenever there is something to share—a chapter of literature—a copy of an old painting—a recording. It all depends on what our few Digester friends can manage—They don't have an easy time of it, you know."

"Is it difficult for them to take things out of the vaults?"

"Difficult . . . and dangerous," Willy answered grimly.

"But why . . .?"

For reasons that make good sense, officially at least. A culture founded on brevity cannot be expected to encourage its own demise through the acts of its civil servants! Think what could happen: A total work of art, whatever its form, takes time to appreciate! But if people spend

too long at an opera, the legitimate theatre or the television industry would be slighted! If they paused too long in contemplation of a painting, newspapers might not be purchased! If they dawdled over the old-style newspaper, the digest magazines, the popular recordings, the minute movies, the spectator sports—the thousand and one forms of mass recreation offered the public—each in turn would suffer from unrestrained competition!”

“It’s inconceivable,” Walther protested, “that entertainment interests could be strong enough to shape a culture! Surely the productive basis of Earth’s economy . . .”

Willy snorted.

“My boy, work as such may still be important in Andromeda, but how could it possibly be so here on Earth? Generations ago, automation, the control of the atom, the harnessing of the sun’s energy—all combined with many other factors to make work a negligible part of Man’s existence! Thus, with four-fifths of his waking hours devoted to leisure-time pursuits, the balance of power shifted inevitably to the purveyors of mass entertainment. Great monopolies, operating under the Happy Time, Ltd. cartel, seized upon the digest trend in the old culture and made brevity the basis of the new order. The briefer you make a piece of entertainment, the more pieces you can sell the public in a given number of leisure hours! It’s just good business,” Willy concluded drily.

Walther was silent a moment, trying to frame this picture in his thoughts. But there were so many

missing elements.

“Your artists and writers,” he demanded, “all your creative people—don’t they have anything to say about it?”

“Damn little. You see, the successful artist—whatever his field—is well paid by his particular monopoly. Besides, he’s been trained in the new form! I doubt if Maria has ever seen the original score of an opera—let alone tried to sing an entire aria!”

Willy took a glass of wine from a tray offered by the hostess’s servo-robot. He motioned to Walther to help himself, but Walther shook his head. Another question was troubling him.

“Why do the monopolies even bother with Digesters and the classics? Why not let modern artists create in the new form?”

Willy’s voice grew hard.

“Because,” he snapped, “there have been no creative artists on Earth for over a century! Why create when your creation is only fed into the maw of the Digesters? That which is not wanted dies—in a culture as well as in the human body! That—my young friend from Andromeda—is the bitter tragedy of it all!”

Maria rejoined them, and whispered something to Willy. The old producer sighed and turned to Walther.

“Maria would like to leave now. Will you take her back to our hotel? There are some people here I must see . . .”

“Of course!”

Yet, in spite of his eagerness to get better acquainted with Maria,

Walther was reluctant to leave. There was so much more he wanted to ask, to learn. And deep beneath the surface of his thoughts a bold idea was beginning to form.

As if reading his mind, Willy said:

"We have no performance tomorrow afternoon. Come and see me at our hotel—we'll talk further! Meanwhile—" Willy's blue eyes sparkled again, "Meanwhile, for the young, the evening is still young. It should be an interesting challenge!"

Maria said nothing until they had left the apartment building and started across the street to the monorail station. Then she stopped, drew a long breath of the wintry air, and shook her head.

"Whtrblvng!" she exclaimed.

She smiled at his puzzled expression and tucked her arm through his. When they were inside the station, he handed her his Manual. She flipped through the pages, but could not find the exact translation of her remark. Finally, she picked out parts of three phrases. Put together, they read:

"What a terrible evening!"

After the first shock of her words, Walther realized he could expect her to feel no differently. She was a product of her culture, and evidently this had been her first visit to Willy's Bohemia.

It was past midnight when they boarded the monorail, and they were alone in the car. Fumbling in her purse for a coin, Maria pointed to the small screen on the back of the seat in front of them. Walther

offered a handful of coins. She put one into the slot beside the screen. A comedy sequence appeared, lasting for approximately thirty seconds. Much of it was lost to Walther, because he couldn't understand the dialogue. But Maria laughed gaily. The tension lines, the outward evidences of inner emotional control, began to smooth away. Her cheeks flushed; her dark eyes began to sparkle. This was the Maria Walther felt he could learn to know.

When the television screen went dark, Maria promptly put another coin into a slot beside a small grid. A full-scale orchestra sounded what might have been the first chord of a symphony, but the piece was over before Walther could identify it. A third coin, dropped into the arm of the seat, produced a small two-page magazine, which seemed to consist chiefly of pictures. One of the pictures showed Maria herself, in operatic costume. She studied it critically, then tossed the magazine into a handy receptacle under the seat. A fourth coin brought out a game from the side of the monorail car. It vaguely resembled a checkerboard, except that there were only six squares and two magnetized checkers. Maria guided his hand while he made two moves. As she completed her last move, the board automatically folded back into the side of the car. A fifth coin summoned a miniature keyboard from just beneath the television screen. Maria touched the keys, producing tinkling noises that sounded like a tiny celeste. Then the keyboard zipped back into its enclosure.

Maria reached for a sixth coin. Walther closed his hand over hers, and made a motion to indicate that his head was already in a whirl. She laughed, but didn't try to remove her hand. A moment later the mon-orail stopped in front of their hotel.

As they crossed the lobby, Walther pointed inquiringly toward the cocktail lounge. Maria smiled and nodded gaily.

A servo-robot waiter seated them at a small chrome table beside a tiny dance floor. Maria ordered their drinks, and the waiter was back with them in a matter of seconds. The glasses seemed extremely small to Walther, compared to the huge mugs and steins he was accustomed to on Neustadt. The liquor tasted rather bland, more like a sweet wine than a whiskey.

The servo-robot presented a bill with the drinks. Money had never meant anything to Walther, but he could scarcely repress a start when he deciphered the amount of the bill. By any standard of wealth or exchange, the drinks were fantastically expensive.

A scattering of applause announced the return of the orchestra. Maria held out her hand in an invitation to Walther. With some misgivings, he led her out on the dance floor. She turned and came into his arms so naturally and suddenly that she almost took his breath away. She danced very close to him. Her cheek was warm, and the faint perfume from the tip of her ear was something he would have liked to explore more thoroughly. But the moment was over

before it began. The music stopped, the orchestra leader bowed and led his men from the stage.

Back at the table, Walther lifted his glass to suggest another drink. She shook her head, explaining,

"Olnrdptd."

Spelled out with his Manual, her explanation was:

"Only one drink is permitted."

And, after Willy's brief orientation, this was understandable: Nothing could disrupt the perpetual entertainment cycles more easily than excessive drinking. A tipsy person was not a good customer for other leisure-time activities. Therefore, permit only one drink to a person, and charge enough for it so that the liquor monopoly would get its fair share of the entertainment expenditure. As Willy would say, it was just good business.

Maria touched his hand to signify it was time to leave. Walther took her up to her room on the 32nd floor, and they watched two musical comedies en route on the elevator pay-as-you-see television screen.

In front of her door, Maria lightly touched the back of his hand with her fingertips. She said,

"Thyfrwdrftm."

Walther knew she was thanking him, but from force of newly-acquired habit he reached for his Manual.

She laughed, shook her head and translated her own words by raising up on tiptoe and brushing his lips with her own.

Their lips were together so briefly that Walther wasn't sure whether he had really kissed her. He reached



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out to take her in his arms and make sure of it.

Defly, she turned away and closed her door behind her.

MANY THOUGHTS interfered with Walther's second night of sleep on Earth, and they weren't only of Maria. In fact, as his idea took form, even the scent of her perfume and the moth-like touch of her lips were forced temporarily into the background of his consciousness.

The next morning he waited impatiently for an hour after breakfast, then went up to Willy's room. Willy came to the door in his dressing robe, holding his glasses in one hand and a sheet of music in the other. He waved aside Walther's apology for not waiting until afternoon.

"Nein . . . nein!" he said. "I ordered an extra pot of coffee—because I didn't think you could wait!"

Willy led Walther into his sitting room and poured him some coffee.

"Maria was already here," he chuckled. "She came to . . . ah . . . pick up music . . . and to ask what I know about you. I told her nothing good, and nothing bad!"

He settled himself in his easy chair with a luxurious sigh. His bristling white hair and cherubic cheeks gave him the appearance of a benign old innkeeper, brought to life from a canvas by Holbein.

"All right, tell me what you've been thinking about all night!"

Walther shifted tensely to the edge of his chair. He spilled a little

coffee in setting his cup down.

"I would like to buy copies," he said, "of everything your Digester friends have ever smuggled out of the vaults!"

"That's a large order, my young friend."

"I'll pay . . . whatever it costs!"

"So would I—if I could afford it! But I fear it's not that simple. Take, for example, the chapter of Don Quixote you heard last evening. The World Government representative from England sent the Digester's notes to an aunt in Liverpool. She'll read them to her Bohemian friends tonight, and tomorrow they may be in Buenos Aires or Istanbul—who knows?"

"But what happens to them eventually? Aren't they kept in some central place?"

Willy spread his short, pudgy fingers in a gesture of hopelessness.

"That would mean organization—and we're not organized. We wouldn't dare to be! I've never stopped to think what finally happens to these things. Perhaps they end up among the papers of some old dreamer like myself. It's enough that they have brought their mellow moments of happiness!"

"It's not enough!" Walther protested fiercely. "It's a great waste! How will you ever improve things that way?"

"Who's trying to improve anything? The people of Earth are content—and those of us who are not entirely so—well, we have our little underworlds of pleasure."

"Is that all you want?"

"Is there more?"

Walther jumped up angrily.

"I believe there is—and I think you do, too!" he said harshly. "If you don't, why did you take me to that meeting last night and invite me here today? Why did you send me off alone with Maria?"

Willy only smiled, but under his silk robe his round belly shook with silent laughter.

"You are a foolish young man . . . and sometimes not so foolish! Sit down. Sit down . . ."

He leaned forward in his easy chair, and his manner became grave.

"Perhaps it's difficult for an old man to come near the end of life fearing that the beauty he loves will never escape from its tomb. Perhaps it's also difficult for an old maestro who cherishes the talent and loveliness of a young woman to know that she may never understand what her gift really means. Perhaps an old man can still dream some dreams that a young man could not comprehend . . ."

The tight knot in Walther's stomach slowly unwound itself.

"Then you will help me," he said quietly.

"Yes, I will help you . . . if I can . . . and you will help me!"

At Willy's suggestion, they decided to talk first to the Digester who had smuggled out the Don Quixote chapter.

"He's been most successful of all of our friends," said Willy. "He might be willing to organize a group of Digesters who could bring out things to be duplicated, and return them, I question, though, that you could duplicate many things here on Earth."

"Then we'll ship them away from Earth! The outermost world of this galaxy—at least to my knowledge—is Alden IV; it's technically well-developed and is a contact with our own galaxy."

Willy called the bald little Digester, and he came over right after lunch. But his reaction to Walther's proposal was not what they had expected.

"This . . . this is a terrible mistake!" he stammered. "It's . . . it's too big—much too big! Now—by being cautious—we can enjoy our little evenings together. But if we anger the Happy Time, Ltd. people we'll lose everything!"

Willy snapped his fingers impatiently.

"What have we to lose? A chance to be tea-cup rebels! This young man is giving us an opportunity to do something about what we profess to believe!"

The Digester looked pained.

"We are already doing something," he protested. "Did I not bring Chapter IX of Don Quixote . . .?"

"You did, and we enjoyed it! But what if we could inspire a rebirth of art as big as a whole galaxy instead of entertaining each other with our little flings at Bohemia?"

The little Digester struggled with the thought for a moment, then dismissed it with a shudder.

"It's too big," he repeated miserably. "Please forget about it, Willy—our own way is best." He glared at Walther, and his distress turned to rage: "I warn you, young man . . . don't start trouble for us! If you can't accept the ways of Earth, go

back where you belong!"

He held out a trembling hand to Willy.

"Goodby, Willy . . . I go now." He hesitated, then added with the wistful air of a small boy waiting to be praised: "In two weeks I will bring another whole chapter to read!"

When Willy only shrugged, the little Digester turned away and sadly left the room.

During the next two days, Willy contacted several other Digester friends. In varying degrees, he met with refusals from each. By the end of the week, only two of the younger Digesters in the Bohemian set had agreed to cooperate and even they were careful not to promise too much.

"At this rate," Walther pointed out glumly, "it will take years to collect any real quantity of material—and I have only six months! Is there no other source?"

Willy shook his head.

"None that I know of."

"There must be!" Walther insisted. "Do you mean to tell me that in all the homes of Earth there are no treasured heirlooms of the past? No books? No paintings? No recordings?"

"Oh, I'm sure they are," Willy agreed. "But how to reach them? We can hardly advertise."

He paused, hesitated, then snapped his fingers.

"Wait—there may be a way—even more illegal than your first suggestion, but still a way . . ."

"What is it?"

"I used the word 'underworld' in speaking of our Bohemian group

last night, but actually there is an underworld, of a sort . . . trafficking mostly in liquor. The cartel's one-drink restriction has never been too enforceable." Willy lifted the seat of his piano bench and took out a bottle. "If you can afford it, you can always buy a bootleg supply."

"What's liquor got to do with art?"

"For a price—the underworld may be willing to traffic in art, literature and music . . . in addition to alcohol!"

Willy sent out word through a bootlegger who supplied some of the opera singers with their favorite beverages. The next night, after final curtain, a greying, bespectacled and very distinguished looking gentleman in formal dress met Willy and Walther in a vacant dressing room backstage. He spoke tersely, and Willy translated:

"He says he has friends who could be interested in your proposition, if there's money enough in it."

"Tell him there's money enough," Walther replied grimly.

Willy digested this, and their visitor smiled his scepticism.

Not accustomed to having his financial standing questioned, Walther faced the man himself and demanded:

"How much money do you want?"

The man understood Walther's tone, if not his words. After a brief calculation, he named a price that shocked Willy, who turned to Walther with dismay:

"Ten thousand credits for every usable piece of art that can be bought outright. An additional de-

posit of ten thousand if it has to be sent away from Earth to be duplicated. You are to pay all shipping costs, as well as legal expenses if any of their men are arrested."

Walther accepted the terms with a nod.

Their underworld contact stared respectfully at Walther, took off his suede gloves and proceeded to get down to business. It was soon arranged for Walther to set up letters of credit in banks of all major cities. Shipments of "tools and machinery" would be billed against these credits, after bills of lading had been inspected by Walther or a designated representative. From the level of the discussion, they might have been transacting legal business on a corporation scale.

Their visitor shook hands with each of them, doffed his top hat and left with a courteous bow.

Willy wiped shining beads of sweat from his forehead.

"High finance," he gasped, "is not a part of my daily routine!"

He dug into a wardrobe trunk, brought out a bottle and poured two drinks. Raising his glass high in the air, he toasted:

"To art . . . and crime! I hope we don't have to pay too much for either!"

"How are you getting along with Maria?" Willy asked a few days later.

"Just what do you expect to accomplish by throwing the two of us together so much," Walther asked bluntly. "Oh, I enjoy it, mind you—but, really, we're worlds apart. When I go back . . ."

"With the young everything is possible—even the impossible," Willy answered evasively.

"Well, tell me something more about her. Where does she come from? Has she ever been engaged? Married?"

Willy filtered a cloud of smoke through his nostrils.

"Maria's the only talented offspring ever produced by a rather poor family in Naples. She still supports them—or rather, makes it possible for them to be good Happy Time consumers. As for her talent . . . well, it was discovered by her first school teacher—and from then on her education was taken over by the opera monopoly! Engaged? Nothing serious that I know of. Married?" Willy frowned. "I shudder to think of her marriage to one of our mechanical young rabbits!"

Walther blinked.

"Do you mind explaining that one?"

Willy grimaced.

"I might as well. You see, sex per se is encouraged, with or without the formality of marriage. Large numbers of offspring are good for society! We have the technology to provide for them, and the more there are, the more potential Happy Time consumers! But the arts of sex . . . the refinements of love . . . Can't you imagine by this time what takes place in the boudoirs of Earth? Sex is something to be accommodated between pay-as-you see television programs! Besides, you've encountered a couple of our young men, do you consider them physically capable of prolonged amour?"

Walther was finding it heavy going to picture some of the things Willy was describing for him. But the mention of the two young men he had met outside the opera that first night brought up a question he'd been waiting to ask:

"What was wrong with them? I barely touched them!"

"Participation sports—physical activity of any kind is discouraged as interfering with the mass entertainment media. The few gifted boys are trained to be professionals. The others scarcely develop enough muscle to walk against a strong wind. In fact, they don't walk any more than is necessary!"

Willy paced agitatedly around his room, and stopped in front of Walther's chair. He held out his hands pleadingly:

"Be patient with Maria," he begged. "You promised to help me, too . . . and this is all I ask of you!"

Walther didn't find it unpleasant to comply with Willy's request. He had nothing to do while waiting for the first shipment to be assembled, and so was able to attend rehearsals as well as the performances of the operas.

At rehearsals, he saw a serious Maria, a perfectionist devoted to her art, a superb technician. After rehearsals and the opera itself, he saw a Maria who was a product of the alien leisure-time culture he had found on Earth—a Maria who flitted with tireless zest from one activity to another, who naturally and enthusiastically accepted the innumerable forms of entertainment offered by the Happy Time cartel.

With growing despair, Walther tried to find some activity they could share. He had always enjoyed sports, so he took her to all the attractions at the Uniport arenas. Each was a new disappointment. What was billed as a fight for the world's heavyweight title ended with a one-round decision. A basketball game was exciting—for three furiously-contested minutes. The professional tennis match consisted of each player serving four balls, which the other attempted to return.

While traveling to and from the various attractions, there were always the diversions offered on the monorail and stratoway cars. Private transportation, Walther learned after hopefully exploring this possibility, had been eliminated for the obvious reason that it was restricted in the number of recreational opportunities it permitted, and might lead to over-indulgence in sex—from the point of view of the time involved, rather than promiscuity. And while walking was not strictly illegal, those who tended to over-indulge were advised to curtail their eccentricity.

After much thought, Walther did hit upon a possibility: It was prompted by his recollection that the natural beauty of such places as the Vienna woods had not been obscured. Since Maria was not required to be at rehearsals until two in the afternoon, they could spend the morning visiting some distant beauty spots he had read or heard about back on Neustadt. Perhaps in some of these places the pace of leisure would be slowed.

Maria happily accepted his initial invitation to spend a morning in the South Sea Islands. They boarded a stratoway car immediately after breakfasting together at the hotel, and soon had exchanged chilly Uniport for languorous Tahiti.

The island village, the natives and their costumes, the wet fragrance of the jungle and the soft rippling of the surf were all as Walther had pictured them since his first reading of Stevenson's voyages to the South Seas.

However, suspecting that the Happy Time cartel had probably made its presence felt in the village itself, Walther steered Maria around it, toward a path that wound invitingly between the tall palms and growths of bread fruit trees.

Maria's hand fell easily, naturally into his own, and she pressed a little closer to him, as if awed by the unaccustomed stillness.

She smiled up at him, started to say something, but Walther put his finger over her lips and shook his head. Maria looked puzzled, then took out of her handbag a miniaturized, self-powered television set, with its own tiny coin meter. She popped in a coin, flicked the dial, and the image of an actor appeared on the screen. Walther covered it with his hand. He took the set away from her, and dropped it into the pocket of his coat. Then he pointed to her, to the shadowed trees around them—and spread his hands as if to ask what more anyone could possibly want.

He wasn't sure she understood,

but he put his arm around her waist and she rested her head against his shoulder. They continued a dozen steps down the path, until it ended at a silvery lagoon. Here, she touched the radio button of her wristwatch—rented on a weekly basis—and the rhythm of a jazz band filled the tropical air.

Walther took her wrist, shut off the radio. He turned her toward him and held her face tightly between the palms of his hands.

"No television," he said firmly, "No radio—no nothing—except this . . ."

She yielded with a faint smile. Her eyes closed, but their lips had scarcely touched when she tried to draw back.

"Not that way," Walther told her. "This way . . ."

He held her face firmly teaching her the kind of kisses that were used in a frontier world where people had time to make love. She struggled away from the unnaturalness of his kissing, then slowly she ceased to struggle.

Suddenly, the lagoon was lighted by a brilliant spotlight, and a servo-robot stepped out of the shadows. It said pleasantly:

"Since only tourists come to this spot, it is presumed that you come from some distant planet. Therefore, let me point out that all couples are limited to two minutes by the lagoon. If you hurry, you can catch a native dance number before the next stratoway leaves."

In the same pleasant tone, the servo-robot began to repeat these words in the other ancient languages of Earth.

Maria's breath came in short, trembling gasps. Her lips were still apart, and she touched them with the tip of her tongue.

"*Weil nur Touristen nach diesem Fleckchen Erde kommen . . .*" the servo-robot droned along in its pleasing voice.

"Oh, shut up!" Walther growled.

He took Maria by the arm and led her back up the path.

"Somehow," he promised her fervently, "Somewhere—we're going to finish that."

"Dthgn," she whispered in breathless wonder.

THE FIRST shipment of "tools and machinery" had been assembled at the Uniport landing. Walther received a formal notice to this effect from the local Exchange Bank. The same evening, in a backstage dressing room, he and Willy Fritsh received a rather more informative report from the gentleman who was their contact with the bootleg underworld. Every item in the shipment was listed and described with meticulous care. By reference to a leather-bound pocket notebook, the contact managed to furnish additional details.

With Willy's help, Walther was able to judge the nature of the haul. He was both pleased and disappointed. Numerically, it had more items than he had expected. Qualitatively, it left much to be desired. There were no complete literary works, only fragments. The pictures were admittedly cheap copies; the recordings were only passages from major works. A total

of eight hundred items had been purchased outright by underworld agents; fourteen hundred more had been borrowed on the security of the huge deposit. The latter would have to be duplicated on Alden IV and returned to their Earth owners as quickly as possible. Walther had expended a huge fortune for a dubious return. But, through Willy, he told the contact:

"Keep it up. Get everything you can!"

Several items did look promising: From an elderly spinster in Durban, South Africa, the first two acts of "Othello" had been obtained by the bootlegger who delivered her dry sec sherry twice a month; in New Orleans, an undertaker had parted with a nearly complete Louis Armstrong original—about an inch was broken off one edge of the record, but the bill of lading stated that the rest was quite audible. There was also what was reported to be the last third of "Crime and Punishment," loaned by a lawyer in Prague.

The second shipment was on a par with the first, with the hopeful indication that some of the new acquisitions would complement others in the first shipment. Walther stood beside Willy at the Uniport landing as the shuttleship carrying their second shipment blasted off on the first leg of the long route to far-off Alden IV.

The third shipment was much smaller, only three hundred outright purchases and seven hundred and twenty items obtained against deposit. With the bill of lading came a warning note. Walther

translated it himself. It was from their contact, who wrote:

"Don't try to get in touch with me until further notice. Send off this shipment as soon as possible. The Happy Time boys know something big is going on."

By paying a fabulous premium, Walther was able to get the third shipment off on the midnight shuttle. Afterwards he stood in the window of Willy's hotel room, staring up at the star-filled sky.

"Well, that may be the end of it," he said.

"You've done well," said Willy, joining him. "I didn't think you'd get that much."

"I hope it'll do some good. Perhaps all this new material will at least form the basis of a good research library."

Willy glanced at him speculatively.

"I was disappointed about the music," he said. "Not one complete work."

By this time, Walther had learned to know when Willy was maneuvering toward an objective.

"Just tell me what you've got in mind," he grinned. "No preliminaries."

Willy chuckled his appreciation, then grew serious.

"Our opera season ends this week . . . We're supposed to take a month off, then start rehearsals for the next tour. Perhaps, during this month . . ."

Walther sensed what was coming next, but he held his breath—waiting for Willy to say it. Willy did:

"Perhaps—if you still want to spend more money to pay them—

we could persuade some of our group to record . . ."

"A full-length opera!" Walther exclaimed. "Would they—could they—do it?"

Willy pursed his lips thoughtfully.

"As for willingness—you've observed that your wealth is rather persuasive on Earth. Like most artists, our people spend more than they earn, and would probably try anything for what you could pay them. As for ability—we'd undoubtedly have to record in short sessions. We might even have to break up the arias into sections, because we're not conditioned for sustained effort."

"I'll pay them anything to try it," Walther broke in, enthusiastically. "Where would you try it—here in Uniport?"

"Hardly. But there's an old inn in North Wales where I once spent a vacation with some of our group. If the Happy Time agents should be watching us now, it would be quite natural to return to that inn."

"Maria . . . do you think she would?"

Willy sighed, and shrugged.

"Not for the money alone . . . she's quite a perfectionist about her art. But I'm hopeful that by this time . . ." His eyes twinkled.

Walther laughed.

"What a chess player you would make! I think you've been moving me around like a pawn ever since the first evening we met!"

"Not a pawn," Willy corrected him with a smile. "A knight."

However, they decided not to tell Maria the real purpose of the proposed vacation until they were all

set up at the inn in North Wales. Walther thought the setting sounded perfect for some personal unfinished business.

"Even I could sing an aria in such a place," Willy enthused.

Willy began quietly and individually contacting other members of his company. With the kind of payment Walther authorized him to offer, he had little difficulty getting performers for the venture. Most of them thought the project ridiculous, but the money was more than they would normally earn in an entire season. Willy swore each of them to silence. They were to treat the trip as nothing more than a vacation. He made arrangements for the various pieces of recording equipment to be shipped separately from London, Berlin and New York.

Willy's pink cheeks were perpetually flushed these days, and his bright eyes sparkled brighter than ever. When Walther brought up the question of which opera would be attempted, he discovered that the shrewd old maestro had long ago acquired Puccini's complete "Madame Butterfly" and had already packed the music for shipment to North Wales.

The night before they were to leave Uniport, a familiar, distinguished figure appeared backstage, threading his way between the huge crates being packed by the servo-robot stagehands. Willy led him immediately to one of the dressing rooms.

With admirable simplicity, the underworld contact put a proposition before them.

The first three shipments had pretty well exhausted the supply of readily obtainable material. With the Happy Time agents now alerted, the risk of trying to get more material wasn't justified by the probable results. But the underworld wasn't anxious to let go of a good revenue source without one big payoff.

What did they propose to do?

Willy's voice shook as he translated:

"For—for the right—fee—they're willing to break into the Uniport Library vaults!"

Walther was silent for a long moment. Instinctively, he recoiled from such overt action. But reason asked: Why should he draw back now? Everything taken from the vaults would be duplicated and returned in good condition. Was it right to let his own personal reaction stand in the way of something that might benefit whole ages of Mankind?

When he had firm control of his own voice, he nodded and asked:

"How do they propose to do it?"

The plan was a piece of professional craftsmanship. In the century of its existence, no one had ever attempted to enter the new library illegally. With the absence of any known motive for doing so, the need for guarding against it was routine. There were the usual doors and time-locks, the alarm systems and servo-robot guards, but nothing that couldn't be handled. They would bring in technicians from Vega VI to handle the time-locks. Otherwise, barring some unsuspected move by the Happy Time

security police, the job was within the bounds of their own abilities. Of course, there must be meticulous attention to detail and planning.

The contact explained that, according to preliminary surveys, they could count on about two hours of work after gaining entrance to the vaults. By concentrating only on books, for speed of handling and packing, a reasonable sized crew should be able to get at least twenty thousand volumes out of the vaults and into a waiting monorail transport, where the crates would already be assembled. Previous arrangements could be made for the midnight freight shuttle to take the crates from the Uniport landing to Cyngus III. From there, the crates could be dispersed throughout the immeasurable reaches of deep space.

"But they must be returned," Walther insisted. "I'll see to that!"

Their visitor shrugged, indicating that this detail was of no interest to him. He named a price, and when Walther promptly agreed to it, Willy poured them all a drink.

"When I was a small boy," Willy said, in a voice that still trembled, "I slid on the seat of my trousers down an icy slope in the Alps. It was good fun for the first twenty yards; and then I realized I had gone beyond my power to stop. That's the way I feel right now. *Prosit!*"

As their caller started to leave, Walther stopped him by raising his hand. Throughout the discussion, an irresistible compulsion had been growing within him. Now he had to speak:

"I've come a long way," he told Willy. "Granting that nothing goes wrong, and that I'm able to leave, I know I'll never return to Earth again. But there's one selfish, personal thing I want to do before leaving. It isn't sensible, I know—but neither was my dream to begin with. I want to go with these men into the Uniport vaults—just to see for an hour—greater treasures than I can ever hope to see again."

FROM HIS room on the second floor of the Bridge End Inn, Walther could look down upon the River Dee, tumbling along beside what was still called the Shropshire and Union Railroad Canal, although the tracks of that ancient railroad had been torn up centuries ago. Old ways and names had a way of persisting in North Wales, despite the pace of modern leisure. Walther had noted with satisfaction that the double consonants of the old language, with their strange throaty pronunciation, had defied contraction. Llangollen and Llantysilio were two nearby cities whose names were still spelled out, as they had been for a thousand years.

He glanced at his watch. Maria should be waking from her nap just about now. In a half hour, Willy wanted to meet with her and ask her cooperation in doing "Madame Butterfly". Walther had suggested waiting until the next day, since Maria was tired from the closing night festivities in Uniport, and from packing the rest of the night in time to catch the morning strato-way. But Willy opposed delay.

As he stood there by his window, Walther had a sense of peace, for the first time since he'd been on Earth. The moment was all the more to be cherished, since he knew it could not last.

A light knock on his door jarred the view and the peace out of focus.

"Come in," he called, and turned, expecting to see Willy.

But it was Maria who entered, looking remarkably refreshed after her short nap. She wore a sweater, a very short skirt and open-toed sandals. Her long, dark hair was combed out loose.

It was the first time he had seen her dressed so casually. She looked more like a Welsh mountain girl than the star of the Uniport opera.

"Hi!" he said, inadequately.

She laughed at his surprise, and put her arms around him.

"Hi," she answered.

Maria had not forgotten her first lesson beside the Tahiti lagoon; and Walther was reviewing some subsequent lessons when both of them became aware of the unwelcome fact that they were not alone.

Willy Fritsh stood in the doorway, smiling benignly.

"Oh, hell," said Walther.

"Believe me, I didn't intend to interrupt," Willy said happily. "But since we're all together right now . . . under such . . . ah . . . propitious circumstances, suppose we talk things over."

"Later," said Walther.

Ignoring his protest, Willy sat himself comfortably on the window seat, opened a large envelope and took out the bound libretto of "Madame Butterfly". He handed

it to Maria, without comment. She stared at it curiously, but made no move to open it until Willy motioned her to do so.

She nodded with recognition at the title page, then as she riffled through succeeding pages, her expression changed from surprise to distaste. She tried to hand the libretto back to Willy, but instead of taking it, he drew her to the window seat beside him, and spoke to her as a father might speak to his daughter.

By this time, Walther could understand a little of what Willy was saying and he could guess the rest of it. Maria's first reaction was to stare incredulously at Willy. As the full meaning of what he was asking became clear to her, she looked up at Walther. He saw scorn and anger in her dark eyes.

When she looked back at Willy, it was to shake her head in emphatic refusal.

Willy's tone became even more persuasive. He gazed out the window as he spoke, down at the river pouring over the weir and ducking under the old stone bridge. Maria rolled the libretto into a tight scroll. Her fingers showed white through her unpolished nails.

Willy stopped abruptly. He looked older, tired. Maria remained silent, her lips compressed into a tight line. At last she answered him, in a voice that was tightly, coldly controlled.

She stood up and walked toward the door. Walther held out his hand; she ignored it. He started after her, and Willy said,

"Let her go."

Willy looked so depressed that Walther felt a need to comfort him.

"It's all right," he said. "We'll forget the whole idea."

Willy shook his head.

"She'll do it," he said wearily.

"But . . ."

"She'll do it because she thinks she owes it to me."

Walther waited for the old maestro to continue.

"As soon as we're through recording," Willy went on, pushing himself up from the window seat, "Maria wants to be released to another opera company."

"I'll go see her right now," Walther began.

"Not now," Willy interrupted. "She wouldn't have anything to do with you. She thinks your only interest has been this recording."

Willy started rehearsals early the next morning, in the big stone barn behind the inn. The structure's high roof and thick walls provided natural acoustics, while its location was far enough from Llangollen to avoid creating undue curiosity. Recording equipment had been set up along one side; around it, the orchestra was grouped. The center area was marked off for vocal rehearsals.

Willy handled the direction himself, and not for a century had any director on Earth undertaken such a staggering task.

From the first moments of rehearsal, it became evident that the orchestra could never hope to play an entire number in one sustained effort. It was not so much the physical effort involved, as the difficulty

of maintaining an emotional crest for so long a period. The first violinist fainted halfway through the opening sequence between Lieutenant Pinkerton and the American consul. This triggered a mass collapse among the woodwinds. The pianist wavered off an octave through sheer fatigue, and the drummer dropped his sticks when Willy cued him to step up tempo.

Willy was frantic.

"We'll have to record a few bars at a time—until they're more accustomed to the strain," he told Walther. "What an editing job this will be!"

The problem with the vocalists was even more acute. Every duet would have to be recorded in at least ten segments.

Maria was the only one who stubbornly insisted on doing a complete number. It was a point of pride with her. She hated the music; it violated every principle she had ever learned. But the perfectionist in her, reinforced by her bitterness toward Walther and her sense of obligation to Willy, drove her to deliver the full measure of her promise.

In the love duet between Butterfly and Pinkerton, which closed Act I, the pale and perspiring Pinkerton was nearly spent as he began his final lines:

Come then,

Love, what fear holds you trembling?

Have done with all misgivings . . .

His impassioned plea quavered; he clutched Maria's arm to steady himself. Willy cut the music. For five minutes they held cold com-

presses to the singer's wrists, while members of the orchestra slumped, exhausted, in their chairs. When all were somewhat recovered, Pinkerton attempted the next two lines of his wedding night rapture:

The night doth enfold us,
See the world lies sleeping . . .

And then he had to rest again.

But when Maria answered, her dark eyes flashing defiantly, she went through her entire eight lines without a pause.

Her great test came with the famous second act solo, "One Fine Day". It was difficult enough to learn the strange words and music, but to achieve and hold the emotional peaks of the solo for nearly two minutes was something she had never before attempted.

Because she insisted on doing the entire aria without resting, Willy set the recording for early in the morning, when the orchestra would be fresh. He asked them to assemble on the improvised sound stage an hour after breakfast.

Willy limited the orchestra to a minimum tune up period so that the musicians could conserve their energies for the ordeal ahead. The violins were the last to be ready. When the final string had been tuned, Willy cued the engineers to stand by and pointed the tip of his baton toward Maria.

"Un Bel Di . . ."

The words came clear as the notes of a silver bell, calling back to life the beauty that had been dead for so long. Walther felt his stomach muscles tighten; a tingle of wonder crept up his spine.

Standing there in the center of

the old stone barn, wearing only sandals, shorts and a light blouse open at the neck, Maria still managed to convey the feelings of the lonely young Japanese wife who sang so confidently of her husband's return from across the sea.

This was Maria, the incomparable artist, using all of her technique to blend the unfamiliar words and music.

But for the first few lines it was only a technical tour de force. Then Puccini's music began to take hold of Maria, merging the artist with the woman, and creating yet a third entity out of the two.

He saw Willy turn, transfixed toward Maria. His hands and baton continued to move, but not by conscious direction. His pink cheeks were pale, etched with deepening lines. His blue eyes were misted.

Even the other members of the company seemed moved by Maria's performance. Yet they could not stay with her emotionally; they were compelled to break the tension by shuffling their feet and self-consciously lighting cigarettes.

To a man, the orchestra played as if hypnotized, sweeping through measure after measure with an intensity that seemed impossible to maintain.

For an uncertain moment, near the end of the aria, it looked as if Maria could not finish. She swayed, held tightly to the microphone for support. Walther stepped forward to catch her, but she recovered, drawing on some inner source of strength to finish:

". . . This will all come to pass,
as I tell you!

Banish your idle fears . . .

For he will return, I know it!"

As Maria finished, she tore herself away from the microphone. Her lips were trembling; her eyes were wide, like those of a woman in shock. She half-ran out of the barn, stopped—confused—in the bright sunlight, and then ran on down the path toward the Inn.

UNTIL LATE afternoon, Maria would see no one. Then she agreed to see Willy for a few moments.

When the old maestro left her room, he looked deeply troubled.

"I don't know . . ." he told Walther, shaking his head. "I don't know what this has done to her."

"What did she say?"

"Right now, she says she will never sing again. She's going to her home in Italy this evening."

"Can we do anything?"

"Looks like we've already done more than we should. Mixing two cultures in one artist is dangerous chemistry!"

Up to this moment. Walther had deliberately avoided any decision about Maria. She had been a continuing and delightful challenge, especially since Tahiti, but beyond that he had not allowed his thoughts to go. Now there was a responsibility he could no longer evade. He had watched the dual personality that was Maria being shattered under the impact of Puccini's music. How would the pieces fit together again? Should he stand by and watch? Or should he try to help? And if he could help her,

how would it all end? The gulf between two cultures could be wider than the mathematics of space between two galaxies, or the bridging power of sex.

Against Willy's advice, Walther decided to catch the same stratoway with Maria, and take his chances on what might happen.

But a phone call from Uniport abruptly changed his plans. It was from their underworld contact, who informed Willy that the "Board of Directors" was meeting that evening; if Walther wanted to attend, he would have to take the next stratoway to Uniport. Someone would meet him at the station.

Uniport or Italy? Willy intervened to make the decision easier.

"This will be your only chance to get into the vaults," he counseled. "Besides, Maria must think some things through for herself."

His emotions in turmoil, Walther boarded the next stratoway for Uniport. As North Wales and England blurred into the ocean beneath him, he had the feeling that he would never see the River Dee country again.

A tall, thin young man, with eyes as colorless as waxpaper, met him at the Uniport station and hurried him into a monorail car. Walther tentatively began a question, but the young man stopped him with an opaque stare.

Four times they changed monorail cars, ending up eventually at a freight terminal, where an older man met them and pointed silently to one of the freight cars. Inside, Walther saw a strange assortment of smiling servo-robots and grim-

faced humans sitting around on empty packing cases. The cases were already marked for shipment and trans-shipment throughout the galaxy.

After quick, sharp glances of appraisal, no one paid any attention to him. He sat down beside one of the servo-robots and forced himself to wait as patiently as possible. For a half hour nothing happened. The servo-robots remained motionless; the humans chain-smoked until the air in the freight car was an acrid grey smog. Nearly every human switched constantly and nervously from his tiny TV set to his watch-radio. One of the men brought out a bottle, but quickly put it away after a staccato command from the greying, square-jawed man who seemed to be in charge.

At 6 o'clock, without warning, the freight car vibrated slightly and began to move. The servo-robots stood up attentively; the humans snuffed out their cigarettes. Peering through one of the small windows, Walther saw that twilight was merging into night.

It was completely dark when the car stopped at a loading platform behind the steel-grey building that towered above the Uniport cultural vaults. A servo-robot guard stepped forward challengingly.

At a gesture from the leader, one of the servo-robots within the car marched out on the platform and presented a punched bill of lading. As the guard fed the document into its tabulator, the other stepped closer and lightly brushed against it. The guard stiffened, as though from a severe shock. There was a

sound like that of a racing motor suddenly thrown out of gear. Then a click, and silence. The servo-robot guard unhinged itself at the knees and collapsed on the platform.

Another signal from the leader, and out of the car scurried the humans and servo-robots. They ran across the platform toward the shadow of the building. Here, two of the men, who Walther guessed to be the experts imported to Earth for this job, traced a circle around the door with an instrument that resembled a small camera. Evidently this was to cut off the alarm system, for almost immediately they relaxed and went on to open the door without any attempt at caution.

Proceeding in single file, lighting their way with powerful flashlights, they passed in similar manner through a series of inner doors to an elevator leading down into the vaults. A servo-robot took over its operation, and they shot downward. At each level, the leader stepped off the elevator to look around. At the sixth level, he nodded and they followed him into the vault.

This was the book vault. Tier upon tier, the stacks of books reached in every direction as far as a flashlight beam could probe.

Motioning Walther to follow him, the leader took a piece of chalk and began marking off groups of books. The men rounded up library carts for the servo-robots, who swiftly fell to loading the carts and trundling them back to the elevator.

Walther soon moved ahead of

the leader and began marking the books himself. They had started in the M-sections. With mounting excitement, Walther chalked off Machiavelli, Mann, Markham, Masefield, Maugham, Maupassant, Melville, Millay, Moliere. . .

Leaping to the next tier, he raced through the stacks marking the works of Nathan and Newton, O'Neill . . . Ovid . . . Then on to Parker, Pater, Pepys, Plato, Poe. . . Racine, Rousseau. . . Sandburg . . . Santayana. . .

What an astounding haul this would be! The masterpieces of the ages, to be whisked across space, from star system to star system, until at last they reached his homeland, where they would grow and multiply a million-fold, generation into generation, down through the millenniums of universal time.

Back to the A-sections! Adams, Aeschylus, Anderson, Aristotle . . .

On to the B-sections! Bacon . . . Balzac . . . Benet . . . Bronte . . . Byron . . .

It was like drinking a heady burgundy. Each new title whetted his taste for more.

Inevitably, the very magnitude of the thing began to have its sobering effect. Was it actually possible to get so much material out of the vaults? Off the Earth?

The leader caught up with him in the K-sections and motioned him not to mark off any more books. They'd have a hard time getting those Walther had already chalked.

Walther rode up with the next elevator load. On the way down, he indicated to the servo-robot that he

wanted to go all the way to the bottom level. There he stepped out of the elevator and stood in the darkness for a moment to steady himself from the excitement of marking so many books.

Then he swept his flashlight beam slowly around the vault.

It was like turning on a light in a tomb that had been sealed for centuries. Certainly this tomb had been sealed, to all except the Digesters and the servo-robot attendants.

The vault was at least two hundred feet high. Walther could only guess at the other dimensions, and the extent of the corridors that fanned out like the spokes of a wheel. Sculptured figures from all the ages of Earth loomed out of the shadows with a quality of arrested life that might at any moment move again.

The figures of the Pharaohs were here, the chiseled perfection of Athens and Rome, the genius of the Renaissance and the primitive gods of the Aztecs. The armless Venus gazed down dispassionately on the bowed back of the Discus Thrower, while Rodin's Thinker stared in eternal contemplation at the belly of Buddha.

And then Walther looked upward.

High overhead, reassembled on a great oblong span of artificial ceiling suspended from the top of the vault, were the nine immortal panels from the Sistine Chapel. Tracing his beam of light through scene by scene of Michaelangelo's creation of the world, lingering among the connective figures of the

prophets and sibyls, the lunettes and triangles, Walther lost all sense of time.

When his back and neck muscles could stand the strain no longer, he wandered deeper into the dim recesses of the vault, following corridor after corridor, entranced. He was like a condemned man watching his last sunrise and trying to absorb it all, knowing he would not come this way again.

Walther did not realize how far he had wandered until he came at last to the end of a corridor and glanced at his watch.

Ten o'clock!

He'd been gone from the group for nearly three hours, and the entire raid had been timed for two hours.

He started running for the elevator. Corridor led into corridor, gallery into gallery. It took him twenty minutes to find his way back to the main vault, another five minutes to locate the right elevator. He pressed the button and listened. There was no sound within the shaft.

He shouted, and there was only the echo of his own voice reverberating through the ages around him.

Fighting down a flutter of panic, Walther turned off his light and leaned against the elevator door to organize his thoughts.

He was sure the others had left on time to make shipment schedules at the Uniport landing. They might have delayed long enough to make a cursory search for him, but his safety was no part of their commit-

ment. They had successfully raided the vaults, which was all they had contracted to do. Before morning, most of them undoubtedly would have embarked on inter-planetary cruises.

Walther's first decision was to try the other elevators on the off-chance that one had been left in operating gear.

None had.

Next, he set off to look for a stair well, fire ladder or other method of exit. It took him three hours to cover the entire vault and its corridors. No doubt of it, the elevators were the only means of entering and leaving.

It was now one o'clock. In eight hours the upper level doors would open to the Digesters. No particular effort had been made to camouflage the gaps in the stacks. His one chance was to reach the street level before anyone noticed the missing books. Meanwhile, he could do nothing except spend the night as comfortably as possible. He spread his coat on the marble floor behind the squat statue of a Malayan goddess.

Surprisingly, he did doze off toward morning. He awoke shortly after eight o'clock, and began to punch the elevator button every five minutes. Finally, at three minutes to nine, a faint hum responded within the shaft. He retreated hastily into the nearest corridor, and waited another ten minutes before bringing the elevator down to his level. Then he entered it, pressed the street-level control and shot upward.

He lit a cigarette, and was pre-

pared to step out nonchalantly as soon as the door opened.

His exit was nonchalant enough, but the servo-robot guard in front of the elevator held out its tabulator slot and said.

"Crdpls."

Walther was shaken, but did not freeze up. He fumbled in his pocket for a slip of paper and tried to cram it into the tabulator. A red light flashed on the servo-robot's chest; a buzzer sounded.

Thirty yards beyond, Walther saw the front desk and the door open to the street. He acted with the impulse. A sidestep took him around the servo-robot, and then he was racing toward the door.

Three steps later, a vise-like grip clamped around his shoulders and swept him off his feet. Twisting, he saw that the servo-robot's arm had elongated, and that the fingers had stretched to encircle his body. He kicked hard at the arm, and that was his last conscious act.

The next time Walther opened his eyes, his head throbbed so violently he closed them again. When the spinning stopped, he tried once more.

Around him he saw four metallic walls, and overhead a ceiling of similar material. Except for a ventilator grid, and the outlines of two doors, there were no breaks in the wall and no decorations. He was lying on a low, narrow cot, and was still fully dressed.

He felt his head. There was a large lump above his right temple, where he might have struck the floor. But he was still too groggy for much speculation. He closed his

eyes to ease the throbbing, and fell into an uneasy sleep.

The creaking of the door must have roused him, for it was closing as he focussed on it. A tray of food was within arm's reach. A smaller door behind his bed had been opened; it led to a tiny washroom.

After freshening up and trying the food, Walther felt much better. He was a strong-nerved young man, not accustomed to worry, and he tried to weigh the facts for and against him. If the shipments had gone off without a hitch, things might not be so bad. He'd been found leaving the vaults, but no one would suppose that he'd have staved around after somehow disposing of the books. They might suspect him, but it would be hard to disprove his story that he'd taken the elevator by mistake the day before and been trapped overnight. Anyway, as a visitor from another galaxy, he was entitled to certain consideration.

He felt even better when the door opened late in the afternoon to admit Willy Fritsh and a tight-lipped man of about forty.

"Your lawyer," said Willy. He looked and sounded grim.

After completing introductions, Willy told him that he was indeed accused of the theft, and would be arraigned in the morning.

"They can't prove it," Walther answered calmly.

"They think they can. Our Digger friend—remember our Bohemian evening?—has come forward to accuse you. He'll testify about the offer we made him."

"We? Will he accuse you, too?"

"Not exactly. I'm supposed to be an innocent bystander. A friend who was used!"

In spite of the circumstances, a hint of the old sparkle returned to Willy's eyes and he smiled faintly.

"What can they do about it?" Walther demanded. After all, he was a Von Koenigsburg.

Willy's smile vanished.

"Our legal friend here says ten years would be a light sentence."

They discussed the case for an hour, while the lawyer took meticulous notes. Then, through Willy, the attorney began questioning Walther about his financial status. Even in the language of consonants, his voice was suave.

The lawyer's precise little symbols wavered as Walther briefly outlined his family circumstances, but a servo-robot opened the door before further questions could be asked.

Willy started to shake hands with Walther, then impulsively put his arms around him. There were tears in the corners of his blue eyes. He tried to say something, but gave it up and hurried out the door behind the attorney.

"Wait." Walther called after him. "Have you heard anything from Maria?"

Willy sadly shook his head.

"No. Nothing."

Walther had scarcely finished breakfast next morning when a servo-robot came to take him to court. The robot linked thumb and forefinger around Walther's wrist with the grip of a handcuff.

There were no spectators in the courtroom; perhaps, Walther

thought glumly, because it was a free attraction that would interfere with the consumption of happy time entertainment. Willy joined him at the defendants table.

"Still the loyal, misguided friend," Willy murmured. "I volunteered to be your interpreter."

The Judge was a human, but all clerks and bailiffs were servo-robots. As soon as the court was gavelled into session, the Prosecutor presented a twenty-second digest of the case against Walther, and called the little Digester as a substantiating witness.

Walther didn't need any translation to understand what the witness was saying. Shifting unhappily in his chair, and avoiding Willy's eyes, the little Digester answered preliminary questions in a scarcely audible voice. But when he pointed his finger at Walther, his voice became shrill and he reddened to the top of his bald head.

"Now he'll be afraid to attend one of our meetings," Willy murmured. "That's what he's really blaming you for."

When the Digester left the stand, a portly man, with a perpetual tick in his left cheek, arose to address the court. He was at the Prosecutor's table, and until this moment had seemed to take very little interest in the proceedings. But now he spoke in a steel-edged voice that was in surprising contrast to his slow, heavy movements.

"He's speaking as a friend of the court," Willy whispered. "His office is legal representative of the Happy Time cartel in Uniport. He's telling the court what a terrible of-

fense you committed—but is willing—in the public interest not to press charges if you'll return the books at once. Otherwise, he demands you be held for trial without bail."

Walther's lawyer conferred briefly with Willy. The Judge and Prosecutor also conferred, and both spoke with obvious deference to the Happy Time attorney.

With a bow to all three, Walther's lawyer addressed the court. His smooth voice rippled lightly over the harsh consonants, and his thin lips parted often in a swift, mirthless smile. He spoke for almost a minute, and the Judge began to toy with his gavel, watching the Happy Time attorney for a cue to his feelings. The attorney had slumped back in his chair, eyes drooping. But the tick in his cheek worked furiously.

Then Walther's lawyer turned toward the Happy Time lawyer and paused dramatically.

"He's talking about your family," Willy whispered again. "I think he's exaggerating a bit, but he says they own an entire planet twice the size of Earth."

When the lawyer continued, the smoothness was gone from his voice. His words came hard, crisp, brief. The elderly Judge sagged back in his chair, the Prosecutor blinked and the Happy Time attorney allowed his eyes to close completely.

"I hope you approve," Willy said in a shaky whisper. "You've just offered to deposit a hundred million credits with the Happy Time cartel as assurance the books will be returned."

"What?—I don't even admit taking them!"

"Neither does your lawyer. But, as he puts it, if anyone acting in your behalf, but without your direct knowledge, should have seized these books and shipped them off the Earth, you will assume responsibility for their return. Otherwise, they may be turned loose among the people of Earth to plant seeds of future trouble."

Walther's lawyer emphasized one brief phrase, and sat down. Even Walther recognized the words: One hundred million credits.

The Happy Time attorney slowly opened his eyes and heaved himself to his feet. He spread out both pudgy hands to the Judge, and shrugged his bulking shoulders. He spoke briefly, and the steel-edge was gone from his voice.

"He suggests that the court in its wisdom, temper justice with mercy." Willy translated excitedly.

After this it was a matter of detail, with the Prosecutor insisting only that Walther be kept in custody and deported immediately after the deposit had been arranged.

The strain of the whole affair had been too much for Willy, but as the smiling servo-robot led Walther out of the courtroom, he called after him:

"I'll be at the landing!"

Walther knew he should be happy. He had found what he wanted on Earth. Not in the way he had hoped, but the final reckoning was the same. Still, there was an emptiness to it all, an emptiness and an aching.

When he cleared customs, and was released by his servo-robot guard, Walther saw Willy Fritsch waiting beside the Cyngus III shuttleship. A half dozen of his musicians were with him.

Willy said with simple directness:

"If you want us, we'd like to go with you."

Of all the things that had happened to him in the last twenty-four hours, this took Walther most completely by surprise. He stared, speechless, from Willy to the musicians, most of them older men.

"These few came to me," Willy said. "They don't want to go back to our own music—Neither do I!" His voice broke, and he continued, pleading: "We can help bring your dream to life in the few years left to us."

Walther enveloped the old mae-

stro in a bear-hug that crushed the breath out of him.

"Want you?" he cried. "Now, who's a fool?"

"You are," gasped Willy, "if you thought I'd leave part of my heart behind!"

Walther looked around quickly.

At the top of the shuttleship ramp stood a young woman with half a smile and half a question on her lips. There was doubt in that smile, and fear. There was loneliness and wonder, and hope. It was a promise and a warning of all that lay ahead for them, out there beyond the stars.

Humbly, more knowing that he had yet been in his short life, Walther held out his hands and walked up the ramp toward her—toward a dream that was over, and a reality that could be more bitter, more sweet, than any dream. • • •

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PROGNOSIS FOR TOMORROW

BY ALAN E. NOURSE, M. D.

THERE are a number of people in medicine these days who seem to feel that we are now in the midst of the Golden Age of medical discovery, and I don't believe a word of it.

"But look at what we've accomplished in the last half century!" they will cry indignantly. "We've routed infectious diseases with the use of antibiotic drugs. We've given life and hope to diabetics. We've solved the riddle of poliomyelitis. We have proved that the human heart can be opened by the surgeon's knife and closed again with impunity. Give us enough money, enough workers,

and enough education and we could wipe malaria from the face of the Earth in fourteen days flat. We've made more progress in diagnosis, treatment, and cure of human illness in the past fifty years than in the preceding fifty centuries! If this isn't the Golden Age, then what is? Why shouldn't we expect to continue at this pace until *all* human illness has fallen to the blade?"

Well, why shouldn't we?

There is a very simple and fundamental reason why we shouldn't expect to, and won't, continue medical progress at the same wild gallop that has characterized the past fifty years of work. We have come within sight of discoveries that will make the achievements of the past half century look pale by comparison—only to find the road blocked off by a great barrier. Nothing we have done in the past will help us to surmount that barrier, but we have reached a point where no other road will do. Far from rushing untrammelled through a Golden Age, medical research has reached the crossroads, and must find some fundamental answers before it can go on.

In essence, medical workers in the past fifty years have been going about the countryside slaying all the little dragons they could find. They have been commendably successful—so much so, indeed, that there aren't very many little dragons left to slay. But it just happens that there are some *big* dragons around that we haven't even touched yet. We don't even know for sure what they look like,

much less how to go about slaying them. And these dragons are killers—the group of disorders generally known as the *degenerative diseases*, responsible among themselves for the vast majority of human death:

Arteriosclerosis and heart disease. Hypertension. Cancer. We have names for them. That's about all that we have.

Of course, there are certain things we do know about these diseases—important things to consider in thinking about the future of our attempts to track them down. First, *none* of these diseases can be expected to yield to medical research in the abrupt, dramatic manner of past medical triumphs. The reason lies in the peculiar nature of these disorders.

With the infectious diseases, or poliomyelitis, we were dealing with specific micro-organisms, vulnerable to specific drugs, medications, or antibodies capable of slowing or stopping their growth. With diabetes mellitus a specific enzyme system was found to be at fault, for which a key enzyme could be supplied artificially once it was discovered and identified. But the degenerative diseases are not specific disorders of any organ or enzyme system. They are *generalized diseases involving multiple organ systems*. In each of them we are dealing not with a sick kidney or a sick liver, but with a sick human body, suffering from a widespread malfunction of the fundamental physiological and biochemical processes of life.

We can see, then, why no specific,

simple, encapsulated answer is likely to be found for any of these vicious disorders. We've tried that already, and failed. Physicians have, for example, run the whole gamut of drugs which should, theoretically, bring down high blood pressure—but their patients continue to die of hypertensive cardiovascular disease. We have tried everything imaginable to stop the wild, erratic growth of malignant cancer cells—but the cancers keep right on growing. We have even resorted to surgery to try to replace the sclerotic blood vessels in human hearts—but we haven't found any way to stop the steady march of arteriosclerosis in the aging human body.

Gradually it has become apparent that the answers we need so desperately will never be found this way. These diseases will be stopped only when we understand *what they are* and *why they happen*; to reach this goal it will be necessary for men to ferret out a complete basic understanding of the physiological and biochemical nature of life itself.

This, then, is the great barrier to the Golden Age of medicine. It will not be surmounted in the next decade, nor even the next. We may well stand on the brink of a "barren age" of medical progress—fifty or sixty years, maybe a hundred, of futile searching—before this great barrier begins to crumble. It will cost us stupendous sums of money and the finest minds we can possibly recruit from the present and future generations, for we will find the answers only if we can develop and sustain the greatest concerted

search in the history of mankind.

But the reward will be far greater than the mere ability to prevent or cure a group of human ailments. The knowledge we acquire in such a search will give us the weapons we need to fight the last enemy—Death—on his own grounds. It will place relative immortality within our reach: a useful, productive human life-span measured in centuries rather than in decades.

This will be the Golden Age of medicine. It could come in our time.

I CERTAINLY DON'T wish to suggest, from the above, that I anticipate a Mexican stand-off in medicine for the next fifty years or so. There will be progress of one sort or another, and plenty of it. For one thing, *all* the little dragons aren't slain yet by any means. A few of them that remain are quite unpleasant enough to deserve the continued attention of medical researchers for many years to come. Some, indeed, have never been truly dead, but continue to twitch their tails from time to time in a most annoying fashion. Others, only recently discovered, are drawing much attention to themselves—such nasty customers as the disease called lupus erythematosus, first recognized in the early 1930's, a country cousin of rheumatic fever and rheumatoid arthritis, but distinguished by its proclivity for killing teen-aged girls and young women. For another thing, and perhaps more important, many research programs now under way show great

promise of providing at least some hope of palliation until the final answers are found.

But if the answers coming from the laboratories and clinics in the next half century are not as startling and revolutionary as those in the past, we can anticipate that certain social and economic changes directly related to medicine will be. Some of these changes have already begun, and their endpoint can be foreseen; others haven't started yet, but are as logical as they are inevitable.

First, we will see the emergence of greater and greater degrees of specialization and super-specialization among practitioners of medicine. The sheer bulk of information and knowledge needed for successful diagnosis and treatment of illness will force this trend to continue and grow. As a result, the concept of the "GP" and the "family doctor" will vanish completely, grieved for a while but soon forgotten. In its place clinic groups of trained specialists will burgeon, offering a far higher quality of medical care for far more people than the general practitioner could hope to supply. As an unfortunate but inevitable corollary, medical education will take longer and cost more in a time when more and more medically trained men and women are desperately needed.

Side by side with the trend toward super-specialization (have you ever heard of a pituitary osmoreceptorologist? A specialist in the function of Paccinian Corpuscle? You haven't? We've got 'em!) another phenomenon, already present,

will develop and expand rapidly: the consolidation of medical clinics and research laboratories into huge, centralized medical centers. Although such centers will grow up chiefly because of economic pressures, they will offer tremendous advantages to medical researchers. Diagnostic and research equipment, as it becomes more refined, also becomes more expensive. X-ray and fluoroscopic equipment, clinical laboratory facilities, electron microscopes, radioactive isotope facilities—all can be shared by many groups of workers in a centralized location, whereas their cost would be prohibitive in smaller installations. What is more, a large, consolidated medical center could effectively use another tool to ease the almost insurmountable task of following current medical literature: electronic memory storage and computer mechanisms could be maintained, with trained crews to summarize medical journal material, catalogue it, store it, and make it quickly available to save researchers the days, weeks and months of almost totally unproductive reading they are so often forced to do just to keep up to date.

Naturally, such installations will cost money, and lots of it. They will become not only research centers but centers for diagnosis, treatment, and hospitalization of hundreds of thousands of patients annually. Medical insurance programs will help foot some small part of the bill, but sooner or later government support to help allay the costs of medical care and research will become mandatory. When that hap-

pens it will come, paradoxically, *without* political control over the use of the money. This idea of paying the Piper without any say about the tune to be played may well be revolting to a national government—just about as revolting as the very thought of government subsidy is to the medical profession—but stark necessity will force an uneasy truce. Medical work, with its basically humanitarian aims and goals, must not be allowed to become a political issue—witness the grisly example of Dr. Salk's vaccine—and yet the search for the answers we must have will be too costly for private support. A truce will have to be made, and the resulting compromise may well be unique in the 3000-year history of high finance!

We will see other strange bed-fellows appearing. Already the radiologist is hard put to tell whether he is a physicist specializing in medicine or a medical doctor specializing in physics. There was a time when the biochemist and the physiologist would have laughed at the suggestion that the electronic engineer might be able to offer them help; now they seek him out to build diagnostic and research machines for them. Lions and lambs, together they go, and the result is a broader scope for each, and perhaps a greater hope that the answers will, finally, be reached.

THIS IS ALL very nice, you may say, but it doesn't help Granny with her rheumatism very much right now. There is every reason to believe that within a few decades

we will have answers that will put an end to Granny's rheumatism once and for all—but what about the meantime? Unfortunately we don't have those answers yet, and we do have Granny. It will hardly do to stand by and wring our hands as we wait, so to speak, for Armageddon.

So the search goes on for answers applicable to human diseases and disorders here and now—palliative answers perhaps, almost always incomplete and tentative answers, but *some* kind of approach at least. This, then, will be the area of visible progress in the forthcoming "barren age" of medicine.

Again, we will see developments in two regions: the refinement of diagnostic and therapeutic techniques already known; and the search for techniques and methods not yet discovered. In the first category, it seems very likely that we will see massive enlargement and refinement of the gawky, impractical present day mass-screening techniques for the early detection of such diseases as pulmonary tuberculosis, cancer, gastro-intestinal ulcer, hypertension and kidney disease. Such mass-screenings have already been undertaken in certain of our cities—massive programs of chest X-rays to "screen" significant segments of the population for pulmonary tuberculosis, to cite a single example. Such programs have invariably been considered impractical for wider use—but with our backs to the wall, *any* technique that offers hope of earlier diagnosis of cancer, for example, must be examined most carefully. Ways can

be found to surmount the monumental cost of such programs; indeed, another decade or so may see mass-screenings as a basic annual requirement of all hospitalization and life insurance contracts.

In the past quarter century we have seen surgery come into its own with the development of techniques once thought to be either impossible or recklessly dangerous. Cardiac surgery, for instance, is now refined to such a degree that surgery of the heart is commonplace, and greater and greater daring is paying big dividends. But at best surgery of today is a pretty coarse proposition—excision of large masses or diseased organs, repair of large faults, incision and drainage of wounds and abscesses. Surgery has always been limited by the necessity of maintaining natural circulation of blood to the vital organs while the operation goes on. But the next quarter century will see great progress in overcoming this barrier to surgical activity. Artificial kidneys and heart-lung machines will become part of every surgical armamentarium. Artificial liver circulation systems may even be developed. With such devices, in conjunction with hypo-thermic anaesthesia methods and drugs capable of slowing metabolic processes throughout the body, micro-surgical techniques would be feasible. Tiny instruments, remotely controlled under microscopic visualization could be used, for instance, to separate cancer cells from surrounding normal tissue on a cell-by-cell basis, or for repair or replacement of tiny, deep-seated blood vessels in vital organs. At-

tempts have already been made to “seed” new coronary blood vessels into human hearts to replace diseased vessels, without significant success; micro-techniques would allow implanting and grafting of tiny, healthy vessels deep in heart muscle to replace the old, sclerotic vessels. Portions of liver or kidney, could be excised or repaired without damage to surrounding healthy cells. Technically impossible today, such procedures may become commonplace as soon as the proper tools are made. Here again the medical researcher and the engineer will work cheek by jowl to do a job neither can do by himself.

Cancer is, of course, the target of concerted attack from all sides in medicine today. The many faces it shows, its inexorable march to fatality once started, the very alien nature of its growth within the human body, all make it a fearful enemy to human life. Yet, paradoxically, the very nature of cancerous growth—wild, disordered, spreading to any type of tissue within the body, even surviving transplantation from body to body—may provide another weapon against the diseases of degeneration: the artificial culturing and transplanting of whole prosthetic organs to replace old, dying ones. Again, an exciting challenge, technically impossible today, which may come within the realm of reason tomorrow.

As for new drugs, the parade continues, often to the exhaustion of our patience. But along with the new drugs, new concepts of drug usage are slowly emerging. The

strange behavior of the adrenal cortical steroids and other hormonal substances are suggesting tantalizing new possibilities to medical researchers. Imagine a drug which gives the best therapeutic effect when it is taken by the *doctor* rather than the patient! Yet this is exactly the way the lysergic acid derivatives are being used in dealing with schizophrenia. Gradually the classical uses of drugs are being reinforced by unknown and untried methods of use.

IN THE foregoing I have deliberately avoided much comment on the future attack on mental illness, chiefly because I cannot find a good, solid, logical jumping-off place from which to start speculating. Speculation might be interesting, but it would necessarily be wild, and right now I'm trying to keep my feet within kicking distance of the ground.

But in speculating on any future development in medicine or allied fields we must recognize the presence of another factor at work—a factor so staggeringly important that it is perhaps the single greatest shaper of the future, yet so unpredictable that it utterly defies speculation. This factor has been called *the principle of serendipity*. In his essays Horace Walpole described the journeys of three hypothetical Princes of Serendib (an ancient name for Ceylon) who traveled in quest of things they never succeeded in finding, but discovered along the way many things which turned out to be better than what they

were looking for. The lucky coincidences that occur and lead to the great medical discoveries, the unpredictable variables that make any speculation seem timid and conservative—this factor of serendipity exercises an overwhelming influence on the direction of medical progress. Penicillin was discovered by grace of serendipity: the spores of penicillium notatum which blew in Fleming's window were nothing more than an annoying contaminant of his bacteria cultures, and it took him twelve years to realize what had actually happened to him—but it changed history when he finally woke up. Practically every medical discovery in history has had some degree of serendipity involved. It is a process which is constantly at work—erratic, undependable, upsetting orderly experiments in the most annoying fashion, yet opening doors we never even dreamed existed before.

So speculation is only of limited value even when based on the firmest ground. Nevertheless, I feel sure that one thing is clear: medicine today stands at the crossroads. We are emerging, only now, from a great darkness, and ahead we can see the barest glimmer of light. The Golden Age of medicine, when it arrives, will bring problems of unimaginable proportions; the social and economic implications of physical immortality are stupendous. It will bring the potential for wisdom, or for cataclysm. It will bring the stars within reach. We stand on the brink of discovery—we will live to see it, to participate in it. • • •

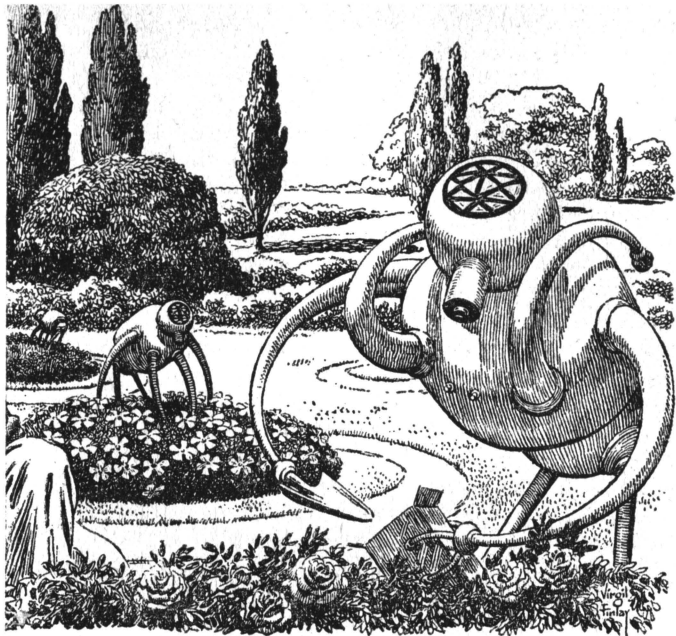


Burial on Earth was the dream of every person in the galaxy.

And Krieg was certainly rich enough to buy his way in.

Valhalla was his. But he changed his mind. . .

BY JAMES MC CONNELL



Illustrated by Virgil Finlay

Nor Dust Corrupt

THE ROOM seemed more a mausoleum than an office, but that was as had been intended. Perhaps thirty feet high, fifty feet wide, it stretched a good hundred feet in length. It was paneled entirely in jet black onyx, which gave a sense of infinity to it. The floor was a thick lawn of heavy black pile carpeting. Only two areas of the room offered mitigation to this oppressive gloom. Just past the middle, bathed in a haze of light, was placed a large black desk,

and behind it sat a man. At the far end of the room, slightly elevated, was an alabaster statue, an abstraction of incredible beauty and poignancy. The statue too was wrapped in a soft nimbus. Few visitors to this room ever had to be told the title of this work of art, for its meaning was apparent in its every line—*Bereavement*.

The man behind the big black desk belonged to the room as much as did the onyx walls, the thick carpet or the alabaster statue. Without the presence of this man the chamber seemed strangely empty, strangely morbid, and few of the man's associates cared to remain in the room when he was not there. Somehow the warm air of benevolence to be found in his fair, pinkish face softened the harsh somberness of the appointments, while the gentle strength in his dark and mournful eyes gave amelioration to the atmosphere of despair. His job was to be a Janus, looking from the cheery rubric of today towards the unknown but dimmer colors of tomorrow—to be a bridge between present pleasures and future fears. There was no better man for the task in all the Galaxy than Consolator Steen.

At the moment Consolator Steen sat waiting, thinking, planning. Soon through the huge doors facing him would come a man, one Joseph Krieg by name, who sought Steen's assistance. The fact that Krieg was one of the richest men in all the known universe made the impending interview a most important one, for Consolator Steen's assistance depended entirely upon the

price that could be paid.

Steen's fingers flicked over the set of hidden controls on his desk. Everything was in readiness. "And another innocent fish gets hooked," he muttered to himself. He sighed once, shortly, then touched an invisible button. "I will see Joseph Krieg now." In the outer office Steen's aide-de-camp, Assistant Consolator Braun, sprang to an attitude of proper deference as the huge bronze doors swung open. Braun bowed slightly as Joseph Krieg strode past him and into the onyx chamber.

Steen's eyes narrowed in admiration as he examined the man walking towards him. Joseph Krieg was a huge person, just past middle age but still retaining the hardened appearance of late youth. His face had a chiseled squareness to it, and his manner indicated not so much wealth as it did an obvious determination to succeed. This would be an interesting fish to play with indeed, Steen thought.

About half-way to the desk Krieg stumbled slightly, but recovered his pace with the cumbersome grace of some massive animal. A smile flickered briefly over Steen's face. The thickness of the carpet had more purposes than one. When Krieg was almost upon him, Steen stood up.

Krieg stopped in front of the desk, facing Steen, as if waiting for some signal. Steen, who knew the value of silence, remained absolutely still. After a few seconds, obviously perplexed, Krieg smiled nervously. "Consolator Steen?"

"Welcome to Earth, Joseph Krieg. Welcome to the Heart of the Galaxy." Steen's voice was rich, mellifluous, and the words fell from his mouth like benedictions. He extended a hand. "Won't you please be seated?"

The chair received Krieg's body as if it were the most precious burden it had ever held. Its soft contours almost demanded that he relax, yield the tenseness of his muscles to its smooth and welcoming shape. Its surface closed around him as if it were a second skin, then began to tingle in gentle caress. Joseph Krieg had never felt so comforted in his life.

Consolator Steen seated himself behind his desk, then waited until his assistant, Braun, had taken a chair some feet away. He smiled paternally. "May I ask you one favor? Would it seem presumptuous if I called you Joseph? Perhaps you would feel it an impertinence on my part, but . . ." Consolator Steen gestured slightly with both his hands, as if to implore forgiveness.

Joseph Krieg smiled, nodded his head. "Of course I won't mind if you use my first name. It would be an honor, Sir." The smile continued on his face, but his eyes narrowed as if he were attempting to puzzle out the figure behind the desk.

"You will excuse me too if I say that you've come too soon, Joseph," the Consolator said.

"Too soon?" Krieg replied quizzically. "I don't think I . . ."

Steen smiled warmly. "I only mean that you look still so young,

so strong and vibrant with life. And yet, perhaps you are the wiser to come now, still in the vigor of living. It shows an honesty with yourself, an ability to face the facts, which is much to be admired."

"Thank you, Sir," Krieg replied. He continued to stare at the Consolator.

Steen knew full well the turmoil that was stirring within the man. The entire interview had been psychologically planned to evoke dark and dormant emotions which, when released, would destroy Krieg's normal ability to judge situations impassively. Proof that things were going as intended came from Krieg's continual use of the word "Sir." Krieg's commercial empires spanned the Universe; from perfume to starships, from food to fertilizers, he was king. And yet he would never understand that it was Steen's quiet paternal power, the fact that he wore wise sorrow wrapped around him the way some men wear a cloak, that called forth this unfamiliar reverence. The psychological survey done on Krieg had cost the Consolator a small fortune, and he didn't intend to waste it.

"You must realize, Joseph, that the things which you have come to discuss are matters of the deepest concern for all of us here on Earth." Steen gesticulated towards Braun as if Braun represented somehow all the other billions on Earth. "The problem is one that touches deep within all of us, and we are anxious to be of whatever service possible. But more than anything else, we want you to know

that we *understand*."

"Thank you, Sir," Krieg repeated. He frowned for a moment, then seemed to smile. "But if you don't mind, maybe we could begin our discussion of terms."

Steen raised one eyebrow slightly. The man showed a remarkable lack of sentimentality. Corrections would have to be made in the approach . . .

"Of course. I am delighted to get on with things. And I must say, I find your attitude extraordinarily sane. The problem is, really, a simple one best met head on. You are here because you know that as it come to all men, death must come to you too. And you feel the necessity to make certain that when your time comes, you will be-brought to Earth to your final rest. You are a son of Earth. This is your great ancestral home."

Krieg started slightly, then relaxed almost in reverie. Steen smiled inwardly at the power of words, repeated, to invoke long forgotten memories. For Steen knew that when Krieg had been no more than a toddling child, learning to read, learning to respond to affection, his simple-syllabled books had spoken in reverent tones of "The Great Ancestral Home." In later years, all of Krieg's studies had had hidden at their core an emotional dependence upon Earth. No place was finer, more beautiful, more important. No, not all the rest of the stars put together. He had been told it a million times until it had become an inseparable part of his very personality, just so the words would have the desired effect at

this moment. *The Great Ancestral Home*.

"You are so fortunate, my son," the Consolator continued. "So very few of Earth's teeming children will ever have the opportunity that lies within your grasp. You must make the most of it."

As Steen watched, Krieg seemed to shake some of the feeling of awe from him. "I intend to make the most of it, Sir," he said, offering Steen his most charming smile. "It just depends on how hard a bargain you want to drive."

Consolator Steen gave Krieg a look of mild reproach. "There is no 'bargaining' to be done, Joseph. The monetary considerations are set by law, and we have no choice in the matter. All that we can do is to explain the services which we are prepared to extend to you, and then help you as best we can to arrive at the most suitable decision. Our position is simply that of catering to your individual wants as best we can."

"My wants are simple," Krieg replied, and it seemed to Steen that far too much of the man's usual forcefulness was returning to his voice. "I wish to be buried on Earth when I die, and I want you to arrange this for me."

"Of course, of course, my son," Steen said, letting just a glint of steel appear in his eyes. "But what do we mean by burial? We have such different problems here on Earth than you do elsewhere in the Galaxy. You must understand that. We are forced to such strange solutions to these problems. But perhaps if I merely show you the vari-

ous types of burial which we undertake, then you will understand." Steen laughed to himself. The fish appeared fat and hungry, and now it was time to drop in the bait.

The Consolator touched a hidden switch atop his desk and one of the black onyx walls rippled and seemed to dissolve in mist. A replica of Earth swam through the haze and into view. "Earth. Such an incredibly small planet, Joseph. But the heart of the Galaxy none the less." The replica seemed to swell in size and geographical details became apparent. "Earth. Once a world of gentle, rolling plains, winding rivers, thick forests, wide oceans and soaring mountains. Just like any other habitable planet. And now look at it. One solid mass of buildings and machines, Joseph. We've drained the oceans and filled in their beds with metal. We've destroyed the forests and the rolling plains and planted the land for miles above and below with throbbing inorganic monsters. We've hollowed out the very mountains to make more space. Space for nine hundred billion people, Joseph. And still we are cramped almost beyond belief. We need to expand a hundredfold. But we cannot. There simply is no room left.

"No room for the living, Joseph, and this means no more room for the dead, either. Here, let me show you." The scene changed, showing first a huge building, and then, the bottom floor of the edifice. "This is one of our larger buildings, Joseph. It is more than fifty miles long and one hundred miles wide.

The bottom floor alone is more than one quarter mile high. This huge space is completely filled with cubes two inches square. Each cube holds the ashes of one human being who wished to find his final resting place on Earth."

Consolator Steen made a motion of resignation. "Notice that I said 'on Earth,' Joseph, and not 'in Earth.' This is our 'pauper's field,' the burial ground of those devoted souls who could not afford to be buried *in* the Earth itself."

Joseph Krieg frowned. "But surely underneath the building . . ."

"Underneath the bottom floor of that building are the bodies of many millions more, Joseph, just as there are bodies under all of our buildings. Bodies of those wealthy few who could afford to escape cremation and find surcease of life in the loamy substance of the Earth itself. I shudder to tell you how tightly packed they are, of the skin-tight coffins which we had to devise, of the geometrical tricks involved in jamming as many bodies as possible in the least amount of space. And yet, it is burial, and it is *in* the Earth itself. No granite monuments, of course, no vases of flowers, no green grass. Just a perpetual flame burning in the main lobby of the building, and a micro-film file available somewhere listing the vital statistics of all those souls whose remains lie in the basement—or below."

Krieg's face was furrowed with a heavy frown. Steen's words had been as shocking to the man as Steen had hoped they would be. "But the Parks . . ."

"Ah, yes, Joseph. The Parks . . ." Consolator Steen leaned forward slightly. The fish was sniffing at the bait quite properly now. "Our Parks, which are the one remaining link with the past. Those green and grassy meadows in the midst of our metallic forests. The last places on Earth where you can be buried out in the open, with flowers over your head and birds singing above. You want to be buried in one of the Parks, don't you Joseph?" When the man nodded briefly, Steen continued. "Which Park, Joseph?"

"Manhattan . . ."

Steen drew himself up with a sudden, silent movement. The fish had taken a good look at the bait. Now to remove it from sight for a while. Steen closed his eyes briefly, then raised a hand as if to brush away a sudden tear. "I'm sorry, Joe. Very sorry indeed. I was afraid that was what you wanted, and yet, there was always . . ." He blinked his eyes. "Manhattan Park is impossible, Joe. Confucius Park in Hong Kong, perhaps. I think there are still some plots available in Frogner Park in Oslo. I'm certain that we could get you into Amundsen Park at the South Pole. But Manhattan . . . No, Joe. That's one dream I'm afraid you'll just have to give up."

"Why?" Joseph Krieg asked quietly but determinedly.

"Have you ever seen it, Joe? I thought not. It's perhaps the most beautiful part of this most beautiful planet in the Galaxy. Would you like to see Manhattan?"

Manhattan. Steen was quite aware that to Joseph Krieg this was

a word of a hundred thousand associations, each of them connected with love, security, devotion and repose. It was like asking a starving man if he would care for something to eat.

Steen did not even wait for a reply. "I think it could be managed, as a special favor. Permission to enter Manhattan Park is difficult to get, you know, but I think this once . . ." Steen turned to Braun. "Put a call through to the President's office . . ."

ATOP GRASSY knolls, supple willows trailed languid branches to the ground. Silver-throated birds sang secret melodies while bees hummed a scarcely audible background. Narrow graveled paths wound through this gentle landscape, now hugging the edge of a tinkling stream, now plunging through carpets of gorgeous flowers. The three men sat silent on a rough stone bench observing the pastoral scene.

Finally Consolator Steen spoke softly. "I understand how you feel, Joe. The first time any of us sees it, we are afflicted with silence. Its beauty is almost painful, the memories it invokes almost beyond bearing. Lincoln is buried there, just beyond that hillock; Landowski not far from him. Shakespeare's grave is there to the right, and close by is the body of Sharon, the poet of the Galaxy. Einstein's final resting place is a mile or so away, and near to it you'll find Chi Wan, who gave us Stardrive. Humanity's Valhalla, Joe."

Joseph Krieg had not cried openly since childhood, and yet now there were tears in his eyes. "This has always been my dream . . ."

Consolator Steen placed a friendly arm around the man's shoulders. "Yes, now you have seen it. Your dream has come true." He paused for just a moment, then said, "And now, Joe, perhaps we had better go."

Joseph Krieg turned towards the man with an abrupt motion. "Go? Why should we go? We've been here scarcely ten minutes."

"Because the longer you stay, the harder it will be for you to leave, Joe. And the less attractive the other parks will seem to you. So, I'd like for us to leave at once." His voice became businesslike. "First, I'd like to show you Hong Kong, and then . . ."

"I don't want to see Hong Kong, or any place else. This is where I want to be buried, Steen. Whatever the price is, I'll pay."

Consolator Steen sighed deeply. "I don't think you understand, Joe. It isn't a matter of price. Manhattan is simply not available to you, for the reason that it is not for sale. I know that you have heard otherwise; I am sure that rumors have reached your ears that burial in Manhattan could be effected for a mere trillion credits. But these fantastic tales are incorrect—for two reasons.

"The first reason, Joe, is a financial one. To the average man, a mere million credits is such a gigantic, unobtainable sum that he is sure anything in the Galaxy could be obtained for a trillion. This is

not so, as you and I both know. Why, a million credits will scarcely get you a burial in a two-inch-square cube in the bottom floor of one of our huge buildings. Remember? I called those huge bargain basements 'pauper's fields.' And that they are—available to those poor people throughout the Universe who have only a few millions to their names. Incredible, isn't it?

"A trillion credits? Why, it takes a hundred billion to make you eligible for burial *under* one of the buildings, where you're packed in like a sardine with millions of other bodies. And how many people in the Galaxy can lay their hands on a hundred billion credits? The answer, Joe, is too many people indeed. Some of them have so much more money than that, they can actually afford to be buried in one of the Parks.

"A trillion credits? Yes, that will get you buried in Hong Kong Park, or in Frogner, or Amundsen. But not for long. You can rent a temporary grave in Hong Kong, for example, for a mere billion credits a day. At that rate, for a trillion credits, you'd stay buried on Earth for less than three years, and then your body would have to be moved elsewhere. Very few people can afford to purchase a permanent plot in one of these parks. But they are available—at a cost of something like one quadrillion credits. And just how many men in the Galaxy *have* a quadrillion credits or so?"

Consolator Steen knew the answer to this question exactly—he also knew that Joseph Krieg was

one of these men. Krieg could have afforded a quadrillion credits, but it would have exhausted his fortune. Steen waited until he was sure that the other man was deep in mental turmoil and then he continued, his voice now softer, less commercial sounding. "And having given you 'the prices,' so to speak, of the lesser treasures, I will now surprise you by saying that the entry ticket to Manhattan Park is free."

Joseph Krieg looked at the man intently, a curious fire of hope in his eyes. "Free?"

Steen nodded. "And because it is free, it is unobtainable. It is not generally known, Joe, but the only way one can be buried in Manhattan Park is by permission of the Galactic Congress. Only certified heroes are so honored, and they are few and far between. Remember the great bacteriologist Manuel de Artega? It took the Galactic Congress more than fifty years of debate after he died to decide to let him in—but after all, the only claim to fame he had was that he saved a few trillion lives from the Green Plague. He was buried here some thirteen years ago. There has been no one since, and no one in sight."

Steen patted the man on the shoulder. "Now, come along, Joe. I want you to take a look at Amundsen Park before you make up your mind. It's not at all cold at the Pole these days—lovely flowers, trees . . ."

"No!" Joseph Krieg cried, standing up. Steen and Braun both rose too. "There must be a way!"

The Consolator smiled inwardly.

The fish was responding magnificently. Now to push the bait just a little closer . . .

"Now, now, Joe. You mustn't get upset about this. The other Parks are just as fine, I assure you," Steen murmured in consolation.

Krieg shook his head. "You can't tell me that sometime or other someone didn't buy his way into Manhattan. It stands to reason . . ."

"Now, Joe. You're taking this much too hard . . ."

"I tell you, I know people. And that's all the Galactic Congress is made up of—people. Tell me the truth, Steen. Has anyone ever bribed his way into this Park?"

Steen frowned and turned his head slightly away from the man. *Just a flick or two more of the line . . .*

"I wish you wouldn't ask me questions like that, Joe. When I say that it's impossible, I mean just that. You'll just excite yourself needlessly by listening to foolish rumors . . ."

Krieg pounced on the word jubilantly. "What do you mean, rumors? Then there *has* been someone who bought his way in! Who was it, Steen? I swear, if you don't tell me, I'll move heaven and earth to find out."

Consolator Steen seemed to consider for a moment, then sighed. *Hooked.* "All right, Joe. But believe me, you'll wish you hadn't asked. For what happened to . . . to this other person is unattainable to you."

"Who was it?" Krieg asked excitedly.

"Who was the richest man who ever lived, Joe?"

"You mean . . ."

"Who was it that founded the University you went to, the hospital in which you were born? Who gave a magnificent library to every city in the known universe, who was it . . ."

Krieg interrupted. "Old C. T. himself . . ."

Steen nodded. "Yes, old C. T. Anderman himself. Years ago, Joe, he faced the same problem you face now, and he reacted the same way you have. So he set out on a campaign to get into Manhattan the only way he knew how—with money. There was one difference, Joe. Where you are fabulously wealthy, C. T. Anderman was wealthy beyond all dreams. Do you know that he gave away more than one quintillion credits—*gave it away!* Just to make his name universally known. 'The Philanthropist of the Galaxy,' they called him. One quintillion credits! No wonder they voted him a hero's grave. But what the press and the public never knew is that it cost him more than twice that much—for he had to spend another one quintillion credits for bribes and influence. It took him fifty years, Joe, to pack the Galactic Congress with enough of his men to swing the trick. But he finally did it."

There was a short silence, then Steen continued. "Now you see why I didn't want to tell you, Joe—to raise false hopes. Only one man in the Galaxy was ever wealthy enough to buy his way into Manhattan. And he had to give up his entire

fortune to do it. I'm afraid that you'll never make the grade, Joe."

Krieg stood stunned. Steen was aware that two quintillion credits was beyond Krieg's wildest dreams, for Steen knew that Joseph Krieg had come to Earth determined to purchase his burial lot and then retire from the business world.

Steen pulled lightly at Krieg's arm. "Now, come along, Joe. Let's go take a look at Hong Kong." The three men started off down the path, but before they had gone ten feet, a robot scurried out of the bushes and dashed over to the bench they had been sitting on. It clucked softly to itself, put forth several arms, and in a matter of seconds had completely washed and disinfected the bench.

Joseph Krieg, an empty and numb look on his face, stopped to watch the process. He stared for a few seconds, then asked hoarsely, "What's that?"

Consolator Steen smiled. "One of the Guardians, Joe. Superb—and completely incorruptible. Within minutes after we leave, every vestige of our visit will be gone—each piece of gravel we tread on will be scrubbed clean or replaced, each piece of grass we touch uprooted and destroyed, even the very air we breathe will be sterilized to remove our traces. We have our problem of vandals too, you know," Steen said, a wisp of a smile playing about the corners of his mouth. "But these are vandals who want to get in and leave something, not like those of ancient times on Earth who broke into burial grounds to loot and destroy. Yes, Joe, we found long ago

that the only safe method was to employ mechanical devices to guard against clandestine burials. So even the gardeners who keep this Park in blossom are mechanical. See, there's another one over there, hard at work."

Joseph Krieg turned and saw to one side, by a large bed of red flowers, another robot with dozens of visible appendages. It purred an almost silent tune as it clipped and pruned, dug and spaded, trimmed and cleaned the beds, occasionally sprinkling a rich fertilizer dust here and there.

"The Guardians of Valhalla, Joe. They were set into motion centuries ago, and not even the President knows how to change their orders. They can't be bribed, even if their human masters can be."

Joseph Krieg stooped down beside the bed of flowers. He reached out and picked up a handful of the fine dirt and let it slip pensively through his fingers. "Dust unto dust," he said slowly. "Man was created from the soil of Earth, and to dust he returneth." There was a long silence as Steen let the emotion run its course. Then he touched Krieg lightly on the arm and the man stood up again. They started off down the path, ignoring the machine that skittered along behind them, cleansing each bit of gravel they stepped upon.

To Steen, this was always the most important part of the interview. While the fish was masticating the bait, he had to prattle on to keep the hook from becoming too visible. "Some day I must tell you of all the ways people have

tried to get themselves buried on Earth without paying for the privilege, Joe. It makes a fascinating story. We're in a difficult position here, you know, for we have to import every single bit of food we eat, every machine we use, each piece of clothing that we wear. But every single item that we import is carefully scanned to make sure that no one has concealed so much as a single human hair in the process." Steen watched Krieg's face closely as they walked. The man should be going through hell just now, but not too much of it showed on his face. Steen continued his prattle, a little puzzled.

"Oh, it's incredible the ways that people have tried to cheat. Some of the methods used are too ugly to relate, some of them humorous beyond belief. But this is why we've resorted to mechanical guards all the way round—to maintain our incorruptibility. Even Anderman with all of his quintillions could not have bribed his way past our machines." Steen's voice betrayed none of the anxiety that he felt. For Joseph Krieg was almost smiling now, was apparently feeling none of the great confusion that Steen had counted upon.

They reached the gates. "Well, Joe. I think we'll head straight for Hong Kong, if you don't mind. It will be early morning there by now, and that's the best time . . ."

Joseph Krieg turned to face the man. "Thank you very much, Consolator, but I don't think that will be necessary. You see, I've changed my mind."

Steen repressed a frown.

"Changed your mind?" he asked blandly.

"Yes. After giving it due consideration, I think that it would be foolish to squander all of my fortune on a burial on Earth. My family would be cheated out of its inheritance if I did, and after all, if my sons carry on in their father's tradition, that's enough for me." Krieg extended his hand. "I wish to thank you, Steen, for your kindness. I regret that I have troubled you for nothing."

Steen shook the man's hand warmly, using his free hand to grasp Krieg's arm in friendly fashion. "It was no trouble at all, I assure you. But please understand, Joseph, if I can ever be of service to you in *any* way, if I can ever be of assistance in any manner whatsoever, please do not hesitate to call upon me. After all, even Anderman had certain problems which . . ." Steen smiled knowingly.

Krieg returned the smile. "I think I understand. And I appreciate your offer, although I must tell you that there is little likelihood that I will be forced to take it up. Again my thanks. And now, goodbye." Krieg turned and strode through the gates.

CONSOLATOR STEEN and his assistant, Braun, stood watching the man as he disappeared into the distance. Then Steen turned and walked over to one of the benches in the Park near to the gates. He sat down wearily.

"Braun," he said. "I don't like it. Not at all. He should have been be-

side himself with worry, he should have pumped me for more information, he should have done a thousand other things. But he didn't. He just turned and left. I tell you, I don't like it at all."

Braun frowned. "He seemed to take the bait, Sir."

"And then, after sniffing it over carefully, he turned and spat it right back in our faces. We can't afford mistakes like this, Braun. Earth needs the money too badly. It's our only means of support, and we can't let a fish like Krieg get off the hook."

"There are other fish around, Sir."

Steen's face took on an angry look. "Of course there are. But none with the potentialities that Krieg showed. Don't you realize that ever since that sad day when Earth realized that she was a has-been, she's had to take advantage of every single opportunity offered her, just to keep alive? Oh, they were clever, those ancient ones who realized that if a civilization is to be kept together, it must have a myth. And so they gave our civilization its myth—that of Earth, the Great Ancestral Home. Just accidentally, it also offered Earth a means of retaining at least a part of her power."

Steen waved his hands in the air. "From an economic viewpoint it was nice too. Only the very wealthy could afford an Earth burial, and so it became a means of hidden, graduated taxation—Earth soaked the rich and ignored the poor, and cut her overt taxes while doing so. Burial became so costly that it

helped break up the huge estates, it helped leaven out the wealth. Our propaganda was sharpened to the point where we could take a man like Anderman and drive him all of his life towards an almost unattainable goal, force him to expend his tremendous energies in the accumulation of great wealth, extending the frontiers of the Galaxy as he did so, building up our civilization's strength in the process, and then, in the end, make him turn all of his wealth over to Earth in one form or another. Oh, I tell you, Braun, those ancient ones were clever."

The tirade halted. The air hung silent for a moment, and the twittering of a near-by bird could be heard.

"They were very, very clever. They gave us all the tools, and somehow we've failed to use them correctly. What was it, Braun? What did we do, or fail to do, that let Krieg get away from us?"

Braun frowned. "I don't know, Sir. Perhaps he just changed his mind about Earth."

Steen snorted. "Impossible! He's had too many years' exposure to our propaganda for that. He can no more give up his dream of burial in Manhattan than he can give up his very personality. No, Braun, I think we just underestimated the man. Somewhere along the line he had an idea, he saw something that we failed to see.

Braun shrugged his shoulders. "But what are we going to do about it?"

Consolator Steen pursed his lips. "I tell you what I'm going to do

about it. I'm going straight back to the office and sit and think, and think, and then think some more. Krieg's got a good fifty years ahead of him yet, and that means I've got exactly that long to guess what's on his mind. I'll get that quintillion credits if it's the last thing I do."

They had no more than reached the gate when one of the mechanical Guardians appeared from behind a bush, chortled to itself and scurried over to the bench. It cleansed the rough-hewn stone, then washed the path the two men had taken. Then, its exceptional chores accomplished, it went back to its normal pursuits.

It approached a bed of begonias nearby. One appendage extended itself and began digging up the dirt around the plants. Meanwhile, inside the machine, other appendages ripped open a small bag and spilled the fine dust inside the bag into a small trough. The empty bag was rolled up and stuck in a disposal bin along with several other bags, all with identical markings:

JOSEPH KRIEG AND SONS,
BY APPOINTMENT,
PURVEYORS OF FINE
FERTILIZERS
TO THE GALACTIC GOVERN-
MENT ON EARTH

The machine clucked quietly to itself as it sprinkled the dust evenly over the black, yielding earth. It patted the fertilizer gently into the rich soil, making sure that each plant got its fair share. Then it scurried off silently to tend to a bed of calla lilies nearby. ● ● ●

*It's been said that the soul is the
form that makes the body—which may
just possibly explain what happened
on that fatal day at Ivy College . . .*

THE OLD GOAT

BY CHARLES L. FONTENAY

DR. ANGSTROM was known to his students and many of his colleagues on the faculty as "The Old Goat." Very appropriate, that name. He had the disposition of a goat with dyspepsia, he had the cold blue eyes of a goat, he had the wagging whiskers of a goat. Perhaps it's in memory of Dr. Angstrom that Ivy College has a goat for its mascot now.

Dr. Angstrom was even more goatish than usual that day last summer when half a dozen top scientists in the field gathered to

see his preview experiment on matter transmission of a live animal. He had been working hard for weeks on the transmitter and keeping up classes at the same time, which did not improve his disposition. Besides, he had a real goat for an experimental animal, and goats are notoriously hard on the nervous system.

This particular animal, at the moment the scientists entered, was straining at his rope, trying to get a mouthful of a tablecloth which graced a nearby table full of jars and retorts. Failing this, the goat exhibited that typical lack of discrimination in matters edible and began to chew on his rope.

I felt a little out of place among all these giant brains. My reason for being there was that I had been serving, during my college career, as sort of a factotum and fetch-and-carry man for Dr. Angstrom, and I was to take notes for him. I had acquired considerable affection for The Old Goat. Maybe that's one reason I hate to see his great scientific work kept under wraps because people still insist it's dangerous.

"I have proved to my own satisfaction that the matter transmitter works," Dr. Angstrom told the assembled scientists. "I have made a number of transmissions of inanimate matter. In theory, it should work just as well for animate objects and I have invited you to be present at the first test of this theory.

"I need not go into detail with you about the basic theory of matter transmission. The transmitter itself picks up the atomic and elec-

tronic 'image' of the object inside it, much as a television scanner picks up a scene, except that it is done in three dimensions instead of two. This is made possible by the four-dimensional element which is the heart of the apparatus and was made available to us through recent intra-atomic research.

"The receiver picks up the image as a television receiver does, except again in three dimensions. The matter is not duplicated because the transmitter strips down the object within it as it transmits.

"Now the question that has been raised by some scientists about the transmission of animate objects is whether the 'soul' or 'life force' can be transmitted. I consider this question ridiculous, and will prove it so. It is my contention that such 'life force' is not a thing apart from the physical shell."

The matter transmitter was a large closed cylinder on one side of the room. The receiver was a similar cylinder on the other. Both were raised slightly from the floor.

As sort of *hors d'oeuvre*, Dr. Angstrom transmitted a large chunk of lead across the room, then a glass jar. In each case, the object was placed in the transmitter and a moment later removed from the receiver across the room. There was no possible way for it to have been moved across the intervening space except by broadcast transmission.

"As you see," said Dr. Angstrom, "I have eliminated the necessity for a switch by building the switch into the door of the transmitter. As soon as the door is closed, transmis-

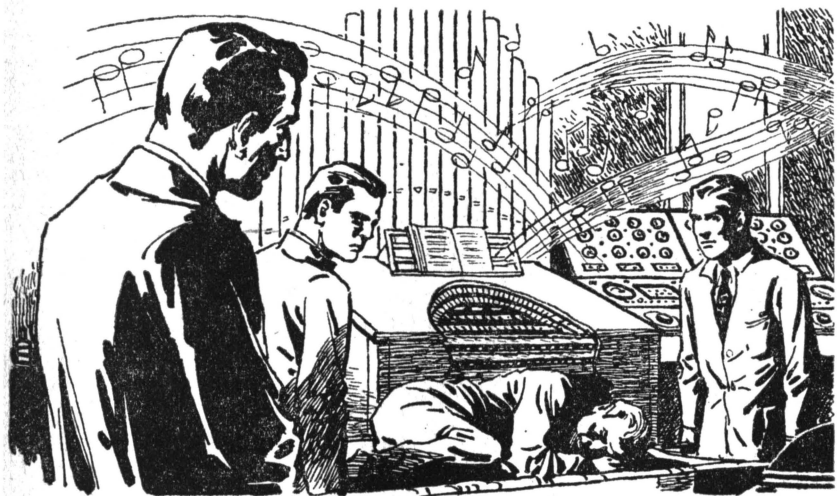
(Continued on page 113)

What Is Your Science I. Q.?

HERE'S ANOTHER quiz to test your knowledge of the scientific facts you often read about in science fiction. Count 5 for each correct answer. You should score 50. Over 65 makes you a whiz. Answers on page 113.

1. The phenomenon of an element or a compound in two or more forms is called isomerism.
2. The Beaufort scale is used to measure wind speed.
3. A sphenic number is one with three unequal factors.
4. How many pairs of nerves connect Man's spinal cord with the main body cavities and the response organs? 31
5. Hysteretic loss is a loss of energy due to molecular change manifest in ferrous.
6. How many coulombs are equal to one faraday?
7. What are the growth stimulating hormones in plants called?
8. What have axons, cytons and dendrites in common?
9. Which archeological age is known as "The Age of Reptiles"?
10. The response of plants to touch stimuli is called thigmotaxis.
11. The technical term for the ultimate heat death of the universe is heat death.
12. The human embryo begins existence with a two chambered heart.
13. The inequality of the moon's motion in orbit due to the attraction of the sun is called an anomaly.
14. An alloy combining mercury and almost any other metal is called amalgam.
15. Marble is a form of calcium carbonate rock.
16. A Nicol Prism is used in the polarization of light.
17. Chemically pH is used to indicate the hydrogen ion concentration of a substance.
18. The Baume scale is used to determine specific gravity.
19. The type of nutrition in which an organism lives on dead organic matter is called saprophytism.
20. A Wheatstone Bridge is an especially devised current for measuring resistance in a conductor.

ULTIMATE MELODY



Illustrated by Paul Orban

You know how a tune can dominate the mind.

Imagine the effect of the perfect melody!

BY ARTHUR C. CLARKE

"CHARLIE," Harry Purvis began, quietly enough. "That darn tune you're whistling is driving me mad. I've heard it every time I've switched on the radio for the last week."

There was a sniff from John Christopher.

"You ought to stay tuned to the Third Programme. Then you'd be safe."

"Some of us," retorted Harry, "don't care for an exclusive diet of Elizabethan madrigals. But don't let's quarrel about *that*, for heaven's sake. Has it ever occurred to you that there's something rather—fundamental—about hit tunes?"

"What do you mean?"

"Well, they come along out of nowhere, and then for weeks everybody's humming them, just as Charlie did then. The good ones grab hold of you so thoroughly that you just can't get them out of your head—they go round and round for days. And then, suddenly, they've vanished again."

"I know what you mean," said Art Vincent. "There are some melodies that you can take or leave, but others that stick like treacle, whether you want them or not."

"Precisely. I got saddled that way for a whole week with the big theme from the finale of Sibelius Two—even went to

sleep with it running round inside my head. Then there's that "Third Man" piece—da di da di *daa*, di da, di *daa* . . . look what *that* did to everybody."

Harry had to pause for a moment until his audience had stopped zithering. When the last "Plonk!" had died away he continued:

"Precisely! You all felt the same way. Now what *is* there about these tunes that has this effect? Some of them are great music—others just banal, but they've obviously got *something* in common."

"Go on," said Charlie. "We're waiting."

"I don't know what the answer is," replied Harry.



"And what's more, I don't want to. For I know a man who found out."

Automatically, someone handed him a beer, so that the tenor of his tale would not be disturbed. It always annoyed a lot of people when he had to stop in mid-flight for a refill.

"I don't know why it is," said Harry Purvis, "that most scientists are interested in music, but it's an undeniable fact. I've known several large labs that had their own amateur symphony orchestras—some of them quite good, too. As far as the mathematicians are concerned, one can think of obvious reasons for this fondness: music, particularly classical music, has a form which is almost mathematical. And then, of course, there's the underlying theory—harmonic relations, wave analysis, frequency distribution, and so on. It's a fascinating study in itself, and one that appeals strongly to the scientific mind. Moreover, it doesn't—as some people might think—preclude a purely aesthetic appreciation of music for its own sake.

"However, I must confess that Gilbert Lister's interest in music was purely cerebral. He was, primarily, a physiologist, specializing in the study of the brain. So when I said that his interest was cerebral, I meant it quite literally. *Alexander's Ragtime Band* and the *Choral Symphony* were all the same to him. He wasn't concerned with the sounds themselves, but only what happened when they got past the ears and started doing things to the brain.

"In an audience as well edu-

cated as this:" said Harry, with an emphasis that made it sound positively insulting, "there will be no one who's unaware of the fact that much of the brain's activity is electrical. There are, in fact, steady pulsing rhythms going on all the time, and they can be detected and analysed by modern instruments. This was Gilbert Lister's territory. He could stick electrodes on your scalp and his amplifiers would draw your brain waves on yards of tape. Then he could examine them and tell you all sorts of interesting things about yourself. Ultimately, he claimed, it would be possible to identify anyone from their encephalogram—to use the correct term—more positively than by fingerprints. A man might get a surgeon to change his skin, but if we ever got to the stage when surgery could change your brain—well, you'd have turned into somebody else, anyway, so the system still wouldn't have failed.

"It was while he was studying the alpha, beta and other rhythms in the brain that Gilbert got interested in music. He was sure that there must be some connection between musical and mental rhythms. He'd play music at various tempos to his subjects and see what effect it had on their normal brain frequencies. As you might expect, it had a lot, and the discoveries he made led Gilbert on into more philosophical fields.

"I only had one good talk with him about his theories. It was not that he was at all secretive—I've never met a scientist who was, come to think of it—but he didn't like to

talk about his work until he knew where it was leading. However, what he told me was enough to prove that he'd opened up a very interesting line, and thereafter I made rather a point of cultivating him. My firm supplied some of his equipment, but I wasn't averse to picking up a little profit on the side. It occurred to me that if Gilbert's ideas worked out, he'd need a business manager before you could whistle the opening bar of the Fifth Symphony . . .

"For what Gilbert was trying to do was to lay a scientific foundation for the theory of hit-tunes. Of course, he didn't think of it that way: he regarded it as a pure research project, and didn't look any further ahead than a paper in the *Proceedings of the Physical Society*. But I spotted its financial implications at once. They were quite breath-taking.

"Gilbert was sure that a great melody, or a hit tune, made its impression on the mind because in some way it fitted in with the fundamental electrical rhythms going on in the brain. One analogy he used was "It's like a Yale key going into a lock—the two patterns have got to fit before anything happens."

"He tackled the problem from two angles. In the first place, he took hundreds of the really famous tunes in classical and popular music and analysed their structure—their morphology, as he put it. This was done automatically, in a big harmonic analyser that sorted out all the frequencies. Of course, there was a lot more to it than this, but

I'm sure you've got the basic idea.

"At the same time, he tried to see how the resulting patterns of waves agreed with the natural electrical vibrations of the brain. Because it was Gilbert's theory—and this is where we get into rather deep philosophical waters—that all existing tunes were merely crude approximations to one fundamental melody. Musicians had been groping for it down the centuries, but they didn't know what they were doing, because they were ignorant of the relation between music and mind. Now that this had been unravelled, it should be possible to discover the Ultimate Melody."

"Huh!" said John Christopher. "It's only a rehash of Plato's theory of ideals. You know—all the objects of our material world are merely crude copies of the ideal chair or table or what-have-you. So your friend was after the ideal melody. And did he find it?"

"I'll tell you," continued Harry imperturbably. "It took Gilbert about a year to complete his analysis, and then he started on the synthesis. To put it crudely, he built a machine that would automatically construct patterns of sound according to the laws that he'd uncovered. He had banks of oscillators and mixers—in fact, he modified an ordinary electronic organ for this part of the apparatus—which were controlled by his composing machine. In the rather childish way that scientists like to name their offspring, Gilbert had called this device Ludwig.

"Maybe it helps to understand how Ludwig operated if you think

of him as a kind of kaleidoscope, working with sound rather than light. But he was a kaleidoscope set to obey certain laws, and those laws—so Gilbert believed—were based on the fundamental structure of the human mind. If he could get the adjustments correct, Ludwig would be bound, sooner or later, to arrive at the Ultimate Melody as he searched through all the possible patterns of music.

“I had one opportunity of hearing Ludwig at work, and it was uncanny. The equipment was the usual nondescript mess of electronics which one meets in any lab: it might have been a mock-up of a new computer, a radar gun-sight, a traffic control system, or a ham radio. It was very hard to believe that, if it worked, it would put every composer in the world out of business. Or would it? Perhaps not: Ludwig might be able to deliver the raw material, but surely it would still have to be orchestrated.

“Then the sound started to come from the speaker. At first it seemed to me that I was listening to the five-finger exercises of an accurate but completely uninspired pupil. Most of the themes were quite banal: the machine would play one, then ring the changes on it bar after bar until it had exhausted all the possibilities before going on to the next. Occasionally a quite striking phrase would come up, but on the whole I was not at all impressed.

“However, Gilbert explained that this was only a trial run and that the main circuits had not yet been

set up. When they were, Ludwig would be far more selective: at the moment, he was playing everything that came along—he had no sense of discrimination. When he had acquired that, *then* the possibilities were limitless.

“That was the last time I ever saw Gilbert Lister. I had arranged to meet him at the lab about a week later, when he expected to have made substantial progress. As it happened, I was about an hour late for my appointment. And that was very lucky for me . . .

“When I got there, they had just taken Gilbert away. His lab assistant, an old man who’d been with him for years, was sitting distraught and disconsolate among the tangled wiring of Ludwig. It took me a long time to discover what had happened, and longer still to work out the explanation.

“There was no doubt of one thing. Ludwig had finally worked. The assistant had gone off to lunch while Gilbert was making the final adjustments, and when he came back an hour later the laboratory was pulsing with one long and very complex melodic phrase. Either the machine had stopped automatically at that point, or Gilbert had switched it over to REPEAT. At any rate, he had been listening, for several hundred times at least, to that same melody. When his assistant found him, he seemed to be in a trance. His eyes were open yet unseeing, his limbs rigid. Even when Ludwig was switched off, it made no difference. Gilbert was beyond help.

“What had happened? Well, I

suppose we should have thought of it, but it's so easy to be wise after the event. It's just as I said at the beginning. If a composer, working merely by rule of thumb, can produce a melody which can dominate your mind for days on end, imagine the effect of the Ultimate Melody for which Gilbert was searching! Supposing it existed—and I'm not admitting that it does—it would form an endless ring in the memory circuits of the mind. It would go round and round forever, obliterating all other thoughts. All the cloying melodies of the past would be mere ephemerae compared to it.

"They've tried shock therapy—everything. But it's no good; the pattern has been set, and it can't be broken. He's lost all consciousness of the outer world, and has to be fed intravenously. He never moves or reacts to external stimuli, but sometimes, they tell me, he twitches in a peculiar way as if he is beating time . . .

"I'm afraid there's no hope for him. Yet I'm not sure if his fate is a horrible one, or whether he should be envied. Perhaps, in a sense, he's found the ultimate reality that philosophers like Plato are always talking about. I really don't know. And sometimes I find myself wondering just what that infernal melody *was* like, and almost wishing that I'd been able to hear it perhaps once. But there'll never be a chance now, of course."

"I was waiting for this," said Charles Willis nastily. "I suppose the apparatus blew up, or something, so that as usual there's no

way of checking your story."

Harry gave him his best more-in-sorrow-than-in-anger look.

"What happened next was one of those completely maddening things for which I shall never stop blaming myself. You see, I'd been too interested in Gilbert's experiment to look after my firm's business in the way that I should. I'm afraid he'd fallen badly behind with his payments, and when the Accounts Department discovered what had happened to him they acted quickly. I was only off for a couple of days on another job, and when I got back, do you know what had happened? They'd pushed through a court order, and had seized all their property. Of course that had meant dismantling Ludwig: when I saw him next he was just a pile of useless junk. It made me weep."

"I'm sure of it," said Eric Maine. "But you've forgotten Loose End Number Two. *What about Gilbert's assistant?* He went into the lab while the gadget was going full blast. Why didn't it get him, too?"

H. Purvis, Esquire, paused to drain the last drops from his glass and to hand it across to Drew.

"Really!" he said. "Is this a cross-examination? I didn't mention the point because it was rather trivial. You see, Gilbert's assistant was a first-rate lab technician, but he'd never been able to help much with the adjustments to Ludwig. For he was one of those people who are completely tone-deaf. To him, the Ultimate Melody meant no more than a couple of cats on a garden wall." ● ● ●

W A R G A M E

THE MINISTER of Peace asked the United States President if he had heard from the Secretary of State. "Yes," the President said. "I heard from Mr. Thompson only a few minutes ago."

"How's their final conference coming, Mr. President?"

"Inevitably. Operation Push Button within the hour."

The Minister of Peace blinked out the window at Washington, D.C. "So they're going to blow up the world?"

"Inevitably."

"Shall we watch it?" asked the Minister of Peace.

The President nodded, spoke to master control through the intercom box on his desk, and switched on the TV screen. They had a special pipe-line into the United Nations Cellar. They sat back, had martinis, and watched the interior of the Cellar come to life on the screen.

Three thousand miles from New Washington, under a natural camouflage of tundra and wintry hills, the U.N. Cellar was thought by its occupants to be thoroughly resistant to any offensive weapons. It was three miles underground, protected by lead, concrete and steel. Its location was known only to the UN Security Division



*The playing of war games should not be forbidden;
but rather viewed as a natural outlet for emotion-
al tensions.*—DR. L. M. STOLTZ, STANFORD UNIVERSITY.

Illustrated by Ed Emsh

that was supposed to be strictly neutral in international affairs, or so the Cellar occupants assumed. The engineers and workmen who had planned and constructed the Cellar were supposed to have been brainwashed and therefore had no memory of the great project. An occasional caribou drifted over the Cellar with the North Wind, and wolves that always follow the caribou.

In his suite, Chandler Thompson, Secretary of State, prepared himself for the global diplomacy game's final hand in which it is never so important what hand you play, as the way you play it. After years of negotiation, full agreement on Operation Push Button had been attained, and Thompson took some pride in having played a leading role in the ingenious idea.

Morten, his valet, finished shaving Thompson's pale face, helped him dress in striped trousers, cut-away, and white gardenia.

"Thank you, Morten," said the Secretary of State.

"You seem calm enough, sir. Frankly, I'm ill at ease."

"You may leave the Cellar if you wish," Thompson said, skimming through his notes. "You've served graciously. I appreciate it. But it is your privilege to return to your family outside now. I might remind you that your chance of survival if you remain here is practically 100 percent."

"It isn't that, sir. It just seems incredible that so many must die." He felt of his wallet, the pictures of his family in it.

"It's hardly a matter of princi-

ple," Thompson said. "Nor a question of ideology. It's simply a question of firmness and realistic practicality, and getting the job done once and for all. That has been my stand from the beginning and naturally it cannot be changed."

"But billions of people dying—"

"Death before dishonor, Morten."

"Yes, sir." Morten knew that in every suite in the Cellar every diplomat was saying practically the same thing. Thompson looked up from his neat notes. "People, Morten, have been properly prepared for violent death. Indeed there has been a feeling of security in numbers. The Ministry of Education working with the War Department has done such a splendid job. Now every child has grown up fully prepared to die in the holocaust. And every individual still a child regards violent death as casually as a game of marbles. The required attitude has been thoroughly conditioned in the populace. The idea was to make violence, savagery, and sudden death, an every day affair. And we have done it. Sad, but a necessary task."

Morten said nothing. Thompson looked at the neon map coruscating on the wall. "Our country is not unique in this, Morten. Annihilation will come as a shock only to the misinformed anywhere in the world."

Morten sat down. He remembered how his kids used to come home from school laughingly playing war games, manipulating toy atomic cannons and the like. They received additional marks in school

for being good and cooperative during atomic bomb drills and preparations for thermonuclear disasters. They had been so proud of their dogtags that came with boxes of cereal. In the evenings out back they used to have bury-the-dead games.

Thompson was saying, "Remember juvenile delinquency? It was necessary. Millions had to be conditioned psychologically for Operation Killer. An insensitive, fatalistic attitude had to be engendered. For their own good."

Morten flicked a speck of lint from Thompson's stooped shoulder.

"Yes, sir," he said. "Maybe it will be humane, in the long run."

"One must face the hard, materialistic facts," Thompson said. "Oh, that reminds me." He went to his private switchboard and got a secret outside line to the Office of Civilian Defense. "Hello, Donnelson. Yes, I'm fine. I haven't talked with you for some time now, and I was wondering about that suggestion of mine. Yes, the household pets thing. That's right, particularly dogs. They're big morale factors in the lives of children and there may be some survivors. Well, then, issue another bulletin on that immediately. Things are reaching a head here in the Cellar. Yes, dogs should be lashed firmly to heavy pieces of furniture, away from windows. Put water where they can reach it. Hysteria under the bombing attacks can be avoided by giving sodium bromide tablets to the dogs. That's right. Survivors will need pets. Morale . . ."

After Thompson was through

talking to Donnelson, Morten said. "You know, sir, the end will be a relief to some people. They've been blitzed by a non-stop barrage of fear bombs so long, I think they'll be glad to get it over with."

"Very perceptive, Morten. That has been one of Psychological Warfare's primary aims in preparation." Thompson got another outside line. Dawson, Civilian Defense. As he waited for Dawson to come in, he said to Morten. "Get the dueling pistols out of the cabinet, please." Morten nodded.

"Hello, Dawson. Fine, fine, things coming to a head here. How much distribution did you manage on the shrouds? Eighty percent? Excellent. I haven't heard from Harry on the details for quite a while. Wanted to check personally. As you say, I've never really lost my touch with the grass-roots. My feeling from the start was that millions of wooden coffins would be out of the question. The olive drab plastic sheets seemed to be the only practical recourse from the start. The psychological importance of getting bodies out of sight as rapidly as possible cannot be overemphasized. Oh, Dawson, one moment . . . yes, I know about the public parks, playgrounds and vacant tracts in the suburbs. But what about New York City? The only way is to send the bodies up the Hudson River using piers as morgues. The problem of where to put so many bodies, particularly when they will all appear for disposal at the same time, is a considerable one. Allowing for three-by-six grave-sites, with three feet for

aisles, the whole problem of adequate disposal acreage is primary." Thompson switched off the connection.

Thompson moved his fingers over the .38 caliber dueling pistols in the velvet-lined case. His eyes mellowed with nostalgia. "Gift from the old Secretary of War. My boy, Don, learned to shoot with this one when he was only six years old. If he had lived to be an adult, he would have been a tough fighter. But he was killed by a rival delinquent gang when he was twelve. He only got there a little sooner. He had just finished reading Niebuhr, so he knew the tragic irony of history."

Thompson balanced one of the pistols in his hand. He looked at his watch. "It's time," he said religiously.

As Thompson entered the Hall of Ministers, the representatives of five balance of power nations arose at once in deference to the sixth. Morten sat unobtrusively in a far corner, holding the case of dueling pistols on his knees.

Thompson sat down. The minutes of the last conference were read by a mechanical secretary. A summation of their final agreement on Operation Push Button was briefly reviewed by the automatic translating secretary. No changes were suggested.

The surface of the huge conference table was somewhat like a gigantic topographical map of the world. It covered perhaps a thousand square feet and had been constructed by brain-washed artisans and engineers and scientists in per-

fect electronic detail. It was so realistic that it radiated a sort of sentience, seeming almost to breathe in astonishing precision with the respiration of important strategically located cities, ports, communication and manufacturing centers. Before each Minister was a console containing several buttons.

Each Minister arose, made a speech concerning the sovereign rights of the particular nation or bloc of nations he represented. In each case, the speeches seemed the same to Morten. He knew that if merely the name of the country or bloc in each speech was changed, the rest would be the same, and sound something like:

"Gentlemen, a free such-and-such people can no longer tolerate a militant rearming so-and-so. Every other possibility has been discussed and rejected. I must say now that at this moment a state of war must of necessity exist between such-and-such and so-and-so."

Morten had been hearing variations of it for years. He knew it all by heart. As each Minister made this implacable statement, he sat down, and without further ceremony, pushed a button or buttons on his private console. On the topographical map, as a button was pushed, some important section of the map, an area, a city, a port, some significant transportation, communication, or manufacturing industrial center, would shoot out realistic sparks, smoke, and then crumble into lifeless debris.

Morten tried to control the flinching and twitching of his muscles. An intricate network of elec-

tronic relays connected with thermonuclear bombs went out all over the world, and were hooked in to the map on the conference table. Millions of people were just blown up somewhere, Morten thought.

Another Minister finished his speech, sat down, pressed buttons. More smoke and flashes shot up. Millions of others out there somewhere have just been annihilated, Morten thought. It doesn't seem possible, he thought then. It's not possible. It's some kind of final madness. But it's happening.

It had been decided that this was the simple direct way, avoiding long, time-wasting programs of mobilization and warfare. If the conclusion was foregone, had been the question, then why not go directly to it by the shortest and most efficient route? And the answer was as inevitable as the question.

More Ministers stood up, made their final declarations, and pushed buttons. Little puffballs and clouds of smoke drifted over the conference table, obscuring distinctive facial outlines and turning the ministers into shadow shapes as Morten watched.

Only two of the Ministers had not yet pressed their buttons. Only two sectors of the world remain alive, Morten thought. He coughed as acrid smoke swirled about the room. He felt a kind of blessed numbed paralysis. He could almost feel the whole world turning into a radioactive hell all around him, mushrooms of gigantic size sprouting fast and furiously in the last big aftermath of rain. Yet he could scarcely imagine how it really was

now, outside the Cellar. He thought vaguely about the dogs, wondering how many of them had avoided hysteria by having been tied to heavy pieces of furniture and given sodium bromide tablets. The kids who survived would need pets.

Morten sat there, trying to see through the thickening smoke. He tried to feel grateful for having been in the Cellar. But in a few more seconds America might also be destroyed. What then? And what if only America remained—would that be any better?

He had resisted such speculation, but how could he resist it any longer? The Ministers had their wives, families, lovers in the Cellar, and supplies enough to last indefinitely. But Morten's family was outside. In a few seconds they might be dead. After that nothing. Nothing at all.

He heard Thompson say in a calm voice. "Morten, the pistols."

He also heard the other Minister say in Russian that he wanted his pistol. Morten had to respect the secret agreement that Thompson and the Russian Minister had made yesterday. After the other Ministers pushed their buttons, Thompson and the Russian would fight a duel then the survivor of the duel would push his button.

"Someone should win," Thompson and the Russian had agreed. "This way, one will be the absolute victor."

If the other Ministers knew what this secret agreement was they either did not care, or did not care enough now. They got up from the

(Continued on page 114)

Barton was unique—an absolutely self-sufficient human being.

The biggest problem he had in space was holding on to his sanity. And he solved it by altering time itself to suit his needs . . .

THE FLOATER

AS A WATCHMAN in a man-made kind of observational meteor floating millions of miles from nowhere out among the planets, Barton had two main duties. To keep his sanity and to keep the watch. The second was simple. The gadgets all took care of themselves. All Barton did was send in a report in case an alarm went off indicating something was wrong with some gadget or other.

Staying sane was supposed to be a watcher's big problem. Barton couldn't figure out why they were so concerned, especially the neuro-psychologist or whatever he was, Von Ulrich, who was always coming around in his clinical space boat, studying Barton, asking him questions, giving him all kinds of tests.



Illustrated by Paul Orban

Once something glinted like a mote in sunlight past the observation port and Von Ulrich said. "That's Collins out there. Collins was here only a week and he put on a pressure suit and jumped into space. He's still rotating round and round out there."

"Poor devil," Barton said.

"Most of them don't even last a week out here, Barton. Six months is the maximum. You've been here almost a year and you're liable to start cracking any minute. I don't like the way things look."

"I feel fine, sir."

Several months later, Von Ulrich dropped by again. "How are things going, Barton?"

"Great, sir. Just swell."

"You feel comfortable, no anxiety?"

"I feel fine."

"You've done a fine job, Barton—so far."

"Thank you, sir."

"You manage to keep occupied?"

"I just take it easy, sir."

"I see."

A few months later, Von Ulrich was back, watching Barton moulding something out of clay, a sort of human shape without a face. There were other self-amusement gimmicks, wood-working, soap-carving, movies and the like, but Barton preferred moulding things haphazardly out of clay, and sometimes reading one of the books he wasn't supposed to have brought along because books were no longer popular.

"What were you thinking about when you moulded this thing?" Von Ulrich asked.

"Nothing much, sir."

"You must have been thinking of something?"

"I guess I was thinking of a man sleeping beside a river in green grass with nobody for miles around. Something like that."

"You weren't by any chance thinking about a dead man?"

"I don't like death much."

Later on sometime, Von Ulrich dropped around again on his therapeutic tour of basketballs, and Martian bases, and other bases even

more remote. Barton wondered how anyone could find the basketball drifting in all that blackness. Just a little ragged spheroid like a piece of dead slag, something like a cork bobbing in a black ocean too big even to bother thinking about. If no one ever found the basketball Barton would have been happier, because the basketball was self-sustaining and could go on and on for years without supplies or any human contact.

"Getting a little lonely maybe?" Von Ulrich asked.

"No sir."

"Don't miss having people around. Your wife, your son?"

Barton wanted to laugh.

"Well, I'll be back to see you, Barton. I may be gone a year this time."

"Happy New Year," Barton said.

But it didn't seem like a year when Von Ulrich came back in his sleek little space-hopping clinic. It didn't seem like much of anything.

"You don't find the absence of women irritating, Barton?"

"I can take them or leave them, sir."

"Not here. There simply aren't any at all."

"I like something, but then if it isn't there, I don't miss it."

"All right, Barton," Von Ulrich would say after giving Barton more brain-wave tests, word-association tests and making him look at ink-blots until his eyes turned red. "See you in a few months."

"See you, sir," Barton said.

And sure enough, as though he had never really been away, Von Ulrich would show up again, with

his testing devices, his cages of mice and guinea pigs, and his intense searching eyes. He had a folder of pictures and after ink-blot tests, he had Barton look at the pictures, like the one of a man in deep shadow standing over a sleeping kid.

"What do you see there, Barton?"

"A guy standing over a kid."

"What's he doing there?"

"I haven't any idea."

"Is the child sleeping?"

"Maybe it's just pretending."

"Pretending what?"

"Or maybe it's dead."

Von Ulrich's thin face frowned intensely. "Is the child pretending to be asleep, or is it dead?"

"Maybe it isn't a real kid. Maybe it's a dummy."

Von Ulrich's face reddened.

"What's the man thinking?"

"How should I know, sir."

"You don't care?"

"No, why should I give a damn what he's thinking?"

"You tell me. Why shouldn't you?"

"Because it's none of my business."

Then there was another time, during some visit or other, when Von Ulrich pulled another word association test.

"Love."

"It makes the world go round."

"Blackness."

"Sleep."

"Alone."

"Quiet."

It went on for hours. Von Ulrich always seemed to be angrier because Barton didn't crack up, or

because he insisted on turning in a perfect service record in the basketball.

"Barton, for God's sake, don't you realize how important this watch is? This valuable information gathered by these recorders. Think what it would mean if that data fell into the hands of the Asians! What if you missed an alarm, or fouled up in some way, and one of these recorders destroyed all the data?"

"Haven't I been alert all the time, sir?"

"Yes! But you've been out here now for three years! Three years. No one can possibly stand it longer than six months. And the fact that you've been here for three years only means some absolutely catastrophic crack-up is being prolonged, built up inside."

"I don't feel a bit different, sir."

"There are subtle ways of cracking up."

"You *want* me to have some sort of symptom or something?"

"Don't be ridiculous."

IT MUST have been at least another year before Von Ulrich came back to Barton's basketball, triumphantly equipped with new devices, and waving a spacegram in Barton's sleepy face. Barton read it, shrugged, and let it drift to the floor. Von Ulrich tried to control a look almost of fear.

"As soon as the minimum time allowed, she married again," Von Ulrich said. "And you pretend it means nothing?"

"She never did mean much of anything, sir. I mean, she was an

interfering kind of woman. She wouldn't let a man live."

"All right, Barton. What about this? She was committing adulterous acts with this fellow, this Major General Woods. She was having an affair with him for two years before you volunteered for duty in the basketball."

"I figured she was playing around."

"You what?"

"It figured."

"You still pretend it meant nothing, that it means nothing now?"

"I don't know what it means. What's it got to do with me now? It was all right, I guess. I could have gone on with it. But this is better."

He dimly remembered Jean bitching all the time of an evening because Barton kept forgetting to take his officer's exam, and how she had to skimp along on an NCO's lousy salary, and so on and so forth. Very much the nagging kind. She wouldn't let him read either. He would tell her he was just sort of stupid, and had always been a drifter anyway, and just sort of fell into marriage and that he never had had any ambition particularly, and anyway big brass got ulcers and heart conditions. And then she would drag little Joey, the big-headed little brat into it, and talk about how little Joey didn't have the right kind of idealized image to assure him a respectable future, and little Joey would stand there and nod his oversized head.

"What about little Joey's future?" Jean would say. "You want him to be just another stupid

NCO? And what about his teeth? He's got to have his teeth straightened. They tease him at school, call him The Squirrel."

"Yeah, Dad. You want me to be personable and saleable and high on the success potential scale? What about my teeth protruding?"

And when Barton went into the bathroom and came back out, Jean was throwing all those books he'd had such a hard time finding into the incinerator. Barton volunteered the next day for basketball duty.

It didn't even seem long ago to Barton. It was oddly like a dream that might have been in the past, or the future, or never at all.

Von Ulrich grabbed up the spacegram and walked stiffly erect out of the basketball.

At some time in the future, Von Ulrich showed up again with even more complicated tests and questions. Barton wasn't sure, but it seemed longer than usual that Von Ulrich was away these days. Time didn't mean much. It didn't have any particular use to Barton now.

"Yes, yes, you have a perfect service record, Barton. Never have missed turning in an alarm with alacrity. And we're so damned short of men capable of taking this kind of duty that I can't pull you out of here until you make an error—or crack up. Just the same you're not fooling me much longer, and you won't be able to fool yourself either."

Sometime later there was the business about Barton's mother. Von Ulrich had files on Barton going clear back to pre-natal, and maybe even before that.

"All right, Barton, you were an only child, and you lived with your mother for 10 years after your father died. Then you married. What about the fact that Jean was a replacement for your mother?"

"If she was, it never seemed that way to me."

"You expected your wife to take care of you the way your mother did. And not demand anything of you. You expected to escape all responsibility and—Barton, do you consider this basketball to be your mother?"

"What's that, sir?"

"Deafness can be psychosomatic too, don't forget that. I said—but you heard me, answer me."

"Doctor Von Ulrich, maybe I'm not normal, but—"

"Then you admit the regression. That this basketball floating in space is a substitute for your mother's womb. You admit it!"

"Why, sir, I didn't—"

"But you know it's true don't you?"

"I didn't say anything about it. You said it."

"I said it because it's a summation of years of careful diagnosis. Look at the etiology. A man who never matured, never was able to accept responsibility as a mature adult. Always just drifting along, into one job, out of it, into another job, out of that, never establishing roots anywhere, always floating about. Unable to accept any responsibility for your marriage, wanting to escape it. Never able to get close, get involved with others, only wanting to receive, never give. What does it add up to? A fix, a

freeze in the pre-natal stage where you were floating free and completely irresponsible in your mother's amniotic fluid. That's why you're here in the basketball."

Von Ulrich's intense eyes seemed to reach out like arms to enfold Barton, then recoiled as Barton shrugged and said: "So, it's like my Ma's womb. What difference does it make what you call it as long as I'm happy in it and do my job?"

Von Ulrich's lips moved soundlessly and then he pointed a finger into Barton's nose. "It makes a helluva lot of difference what you call it. You may be doing an efficient job here, but for the wrong reasons. I wish I could recommend, on the basis of my diagnosis, that you agree to a month's checkup in the Martian Clinic but—"

Barton interrupted. "I'm glad you can't. I wouldn't like that as much as this. Maybe your reports won't cut much ice as long as I keep up the perfect service record."

Von Ulrich's jaws were ridged. "Damn the military system! Damn a system that says a man has to stay up here till he's dead or crazy or makes a mistake!"

"But Doc, I like it. I'm happier here, I think. Maybe I wasn't normal on Earth. Maybe I'm not normal here, or maybe being abnormal on Earth makes me normal here. I'm happy and I do my work."

Von Ulrich backed away a few steps, then turned and ran out and slammed the sliding panel. He didn't say goodbye to Barton this time, or that he would be back. But Barton took no hope from Von Ulrich's lack of ceremony.

Von Ulrich did come back, several times. Barton was sleeping a great deal now. He didn't putter with the gimmicks much, not even the clay, and he'd about read the books out. He slept a lot and yet there was a funny heavy feeling as though he never did quite sleep or never quite woke up either. But it was a good feeling because when a man was too sound asleep he didn't enjoy it because he didn't know anything about it. This was sort of in-between, and Barton loved it. Sometimes he would blink his eyes and see Von Ulrich standing there, probably with some new testing device, or with a notebook open, or with a helmet with wires to attach to Barton's skull to record something.

Another time he thought some stranger was there and then he realized that Von Ulrich's face was sagging and wrinkled and that his hair was thinner and gray.

"Why not have groups of watchers if you're so worried about one being alone?"

"We tried that, it was worse, Barton. They killed one another."

"Well, sir, my being alone is a good thing then, in that respect."

"Have you ever thought that you would kill yourself?"

"Why no, sir. Why should I?"

"Because you hate yourself. In a society, people can externalize their self-hate. They can hate society, other people. You can only turn your hate inward, on yourself."

"But I don't hate anything, sir."

"You do!"

"But, sir, I don't."

"Barton, I said you hate yourself.

It's in all the charts, everything. We all hate ourselves to some extent, why should you be different from everybody else?"

"Why not, sir?"

Von Ulrich pressed his hand over his eyes, and walked out.

IT WAS like a dream with a shadow drifting in and out and in again, and it was Von Ulrich, looking so much older this time. "It's been almost fifteen years, Barton. Fifteen years."

"So? Fifteen years earth time. What does that mean here to me, sir?" Barton smiled, closed his eyes. "What does time matter in your mother's womb?"

"You've developed a definite measurable syndrome, Barton. Excessive lethargy and a sleeping compulsion. Eventually it will destroy your efficiency as a watcher if it hasn't already."

Von Ulrich set off an alarm and in less than four seconds Barton was over there sending a report out to the authorities, a report Von Ulrich immediately canceled as being false.

Von Ulrich seemed to dissolve in a haze of fading light.

"Is that you, Von Ulrich, sir?"

"I'm afraid so, Barton. Back again."

Von Ulrich sat down in the contour chair and filled a pipe.

"Remember, Barton when you took your test for basketball duty? The dead man's float?"

"I sort of remember it, sir. It was fun."

Von Ulrich flinched. "Fun? I've

gone over that report on your test, Barton. It doesn't make sense. What the hell are you anyway? A damned freak, a mutation, an alien in disguise?"

The dead man's float had been pleasant for Barton, that was all he could remember about it. They had taken off all Barton's clothes so that nothing touched Barton's body but a blacked-out head-mask through which to get air. He had been put in a tank of water at body temperature upside down and floated there. There was no sensation. It had been one of the happiest times of his life. Like floating on air. Hearing nothing, seeing nothing, feeling nothing except his own existence. Not even able to tell which was right side up, or right side down, cross-wise or whatnot. He had been told to keep still, but nobody had needed to tell him to do that.

"The first two or three hours of that dead man's float is a good test for basketball duty, Barton. It's a kind of final isolation of the human organism. Normal human beings can take a couple of hours of it usually. They like it. Every human being to some extent likes to return to the womb. But after a couple of hours most human beings start going to pieces, short-circuiting. The reason is the deprivation of any outside stimuli. Something has to feed in through some source—some reception source—the skin, ears, nose, the eyes. These things feeding in, they orient a person, tells him when he's thinking, feeling, gives him stimuli for additional thinking. With all these turned off, a person is simply left with a closed circuit.

This begins to go round and round and distorts and magnifies and ruptures the whole thinking process. The floater becomes anxious, then very anxious, then he begins having hallucinations, finally becomes completely disoriented. All this happens to a normal human being inside, at the most, three or four hours. No human being should be able to remain sane after four hours of the dead man's float, Barton. But remember how long you lay there in that tank?"

"I didn't care how long it was."

"Three days," Von Ulrich said. "The neurophysiologist in charge there kept checking your reaction and finally he had to take you out of the tank, not because you were short-circuiting, but because he was. The impression was that you would have been delighted with the prospect of doing the dead man's float forever."

"I don't remember it being any special time. It was like a dream, sir, you know."

"I don't know, but I'm trying to find out." Von Ulrich sighed and looked through the spaceport at blackness. "Out here I sometimes find myself wondering what normalcy really is. Things sometimes veer toward the dangerously relativistic." He sat there in the pure one hundred percent silence of the basketball while it accumulated. "There's one thing we've always insisted no human being could tolerate, Barton. Isolation. Sullivan said that a single minute of complete isolation would kill a human being. And you've been in a dead man's float for almost twenty-two years."

"Twenty-two years, sir?"

"Doesn't mean a thing to you does it?"

"Well, sir, it doesn't seem to have had any time in it. I was just here."

There was another time, like all the other times, except that Von Ulrich seemed much older, his hair thinner and now all of it gray. There seemed to be something tired about him, except for the brightness coming from behind his intense questioning eyes.

Suddenly he asked, "Barton, what time is it?"

Barton glanced at the chrono. "Quarter of four, sir."

"Keep looking."

After a while Barton said, "Still quarter of four."

"That chrono hasn't been working for three years. I stopped it three years ago. You haven't even noticed it, have you?"

"I guess not, sir."

"Take a long look out there, Barton. Nothing to see but blackness. No feeling of distance. Imagine your mind going out there, exploring, trying to fit in somewhere. You look out there, you project your thoughts out there, nothing comes back. So what time is it? Where are you in all this? There was nothing out here until you came along, not even any meaningful kind of time out here. *But there has to be some feeling of time, Barton!*"

Barton felt a tinge of uneasiness. He looked out. It looked cold.

"What time is it, Barton?"

"What difference does it make?"

"Your body has to know. Your

body works on a timetable doesn't it? Your lungs, expanding, contracting regularly. Your heart beating so many times regularly—*every minute*. Your blood circulating regularly. Look here, Barton. You're a product of a specific environment, on a big scale, call it Earth, the Solar System. You claim it means nothing, time means nothing. But your heart beats regularly so many times every minute and that's why you're alive. Where did the arbitrary rhythm of that beat come from, Barton? You were born with it. It isn't anything you control, or had anything to do with developing, is it? What's a minute? On Earth, it has meaning. Sixty seconds part of a minute. Sixty minutes make up an hour. What's an hour but a segment of a 24 hour day. Where does that figure come from? The Earth, Barton. It rotates on its axis approximately every 24 hours. 24 hours make a day, seven days a week, so many weeks in a month, twelve months make up a year. A year, Barton, the Earth rotates around the sun once a year."

For the first time in the basketball, Barton began to feel some discomfort. He closed his eyes and while they were closed he became acutely aware of his heart beating, and the expanding and contracting of his lungs.

"You claim there is no Earth any more, Barton. No Earth rotating on its axis, no Earth rotating around the sun. No sun, no moon, no time. Why should your heart go on beating regularly so many times a minute—when there's nothing out here that gives a minute

any meaning? Has time stopped here? Is there any time here, Barton, when there's nothing here to turn time into measurable segments? How can your heart beat so many times a minute, a year, a lifetime if there's no such thing here any more?"

Barton slowly opened his eyes. His hands felt wet.

"This basketball doesn't rotate, Barton. Doesn't move toward, away from, or around anything. It's moving with the Galaxy but that can't mean anything to you can it? Listen, Barton, your body operates largely on an unconscious level, but what if unconsciously your heart, your lungs, your bodily functions start to lose their conditioned memory of the Earth's rotation, the regularity of its movement on its axis and around the Sun that gave your birth? What will happen then, Barton? What happens to your heart-beat if your heart begins to forget how long a minute is?"

Von Ulrich leaned down close to Barton's damp face.

"What time is it, Barton?"

Barton started to look out the spaceport again, but jerked his head in the other direction. He didn't want to look out. Von Ulrich waited, but Barton didn't say anything. Finally, with a tight smile on his face, Von Ulrich got up and went to the door.

"I'll see you again, Barton. Some time."

Barton started. "Wait—don't go," he started to say. But something constricted in his throat and he hardly even moved his lips, and no sound came out at all.

He saw the cold streak flash past the view port. It was Von Ulrich's clinic. Quickly he looked toward the wall. The chrono was gone. Von Ulrich had taken it with him. There was a watch, a wrist watch. Barton ran around looking for the wrist watch, but he couldn't find it.

When he lay down again and closed his eyes, he couldn't rest. He couldn't sleep. His heart beat got louder, and after a while that was all he could hear, and when he tried to figure out how many times a minute his heart was, or was not, beating, he couldn't.

What time was it?

THE WAR in which all of Earth's outposts were involved, lasted thirty years. The basketballs were forgotten for a long time, and when they were remembered again, a special search was rewarded by finding only two of them. In the first basketball there was no trace of the watchman who had been abandoned in it almost half a century before, and no indication of what had happened to him.

In the second one, Von Ulrich found Barton still lying peacefully on the couch, looking hardly any different than when Von Ulrich had walked out and left him there.

Von Ulrich, who had been retired for a long time and who was unable to get about except in a wheel-chair, had requested inclusion among the search boat's personnel. No one had figured out why because even if they found any basketballs, it was certain that no one would be alive on any of them,

let alone anyone needing Von Ulrich's specialized talents.

Von Ulrich had hoped that Barton's basketball would be found and when it was found, he insisted on being carried through the inter-connecting airlock into the spheroid that looked on the outside like a dead piece of slag.

The ship's medical officer, a man young and rather stiff, was shocked at first to see Barton lying there, but he had a ready explanation as he used his stethoscope. "Must have sprung a leak and let in preserving fridity."

"But then how did the leak repair itself and the temperature return to normal?" Von Ulrich asked as he studied Barton's smooth, unaged face.

"Dead," the medical officer said, and he dropped the stethoscope back into his case.

Von Ulrich gripped the husks of his hands together to keep them from rattling, and he smiled slowly. "Barton didn't like death much."

Zeiger the medical officer looked puzzled. "You know this man?"

"A little. I tried to know him better but a war intervened. His name is Harry Barton and he was assigned to duty in this basketball fifty-three years and about four months ago."

Zeiger turned away as though to hide an embarrassed reaction.

"You think I speak out of some mental senility, Zeiger? You know this man isn't dead."

"He has to be dead."

"Not Barton. He would hardly approve of your diagnosis. He never cared much for diagnosis

anyway. This is Harry Barton, and I've preserved—for personal reasons—his file. I have it with me. You want to check his fingerprints? You'll find it's the same man who was assigned to duty here fifty-three years ago."

"There's no heart-beat," Zeiger insisted, but not very enthusiastically.

"Better give Barton a more thorough check," Von Ulrich said.

Barton's heart was beating all right. Once every thirty-seven hours and fourteen seconds. Regularly, strongly, very slowly, but without a tremor. The electroencephalograph registered brain waves of regular rhythm, but of quite low amplitude. But with a frequency slowed to a point so far below normalcy that it took a week to establish recognizable delta, theta, alpha and higher frequency wave-forms. Using the electronic stroboscope to induce changes in brain-wave reaction by flicker got results. But the frequency didn't change. When they forced Barton's eyes open and used the stroboscope, a slight change in theta rhythm signified some irritation, but it was mild.

"Barton never hated anybody," Von Ulrich said.

It was slow work though, testing Barton's reactions. It was five days after the stroboscopic stimulation before the termination of the brain reactive crescendo. Another week before theta rhythm returned to normal.

". . . so I finally decided," Von Ulrich told Zeiger, "that Barton was unique—he was the impossible.

The absolutely self-sufficient human being, needing nothing but himself. I was getting older and I figured there was a chance I might not get back and the war threat and so forth. I was worried about leaving Barton. But only for one reason."

Von Ulrich explained his concern about what might have happened if Barton's autonomic nervous system had lost its identification with the time factor that had conditioned it.

"I figured Barton was absolutely self-sufficient, except for the time factor. He had to have something outside himself relatively to which his organs could function in a necessary regularity."

Zeiger poured himself another shot of rum and drank it quickly.

"So he's still here," Zeiger said. "We'll have to take him to the Martian Base for observation."

"Why not, leave him here? Barton has a perfect service record. He's never missed an alarm."

"But in this condition—"

"Let's see." Von Ulrich set off an alarm. Barton moved, but it took him almost a week to move a few inches.

"That's too slow," Zeiger insisted.

Von Ulrich said, "I'll turn in a complete report on Barton. If the authorities want to have him removed, all right. But maybe they won't. Maybe they'll decide they have a laboratory here for the study

of a human being that's more important than whatever's being absorbed by those recorders. Barton is the thing to watch. I call him the 'Adaptable,' because I believe he can adapt to anything, fit himself into any situation, any kind of environmental circumstance, if he's not interfered with too much, if he's given even a slight chance. You see he altered his metabolism in order to relate to a different, highly personalized time. And he hasn't aged much either. God knows how long he will live, Zeiger, with such a slowed metabolism. And not only that—who knows what unique kind of personalized time he's developing there inside himself? Who knows if we can even make a human comparison?"

"But how did he set this new arbitrary time of his? The heart beating every thirty-seven hours and fourteen seconds?"

Von Ulrich looked through the spaceport, and then pointed when the pressure suit drifted past with the long-dead Collins perfectly preserved in it and still looking out through the face plate.

"That way," Von Ulrich said. "Collins is our little human satellite out there, and he rotates around the basketball once every thirty-seven hours and fourteen seconds."

"Well I'll be damned," Zeiger said.

"Of our time, that is," Von Ulrich said. "But our time doesn't mean anything to Barton now."

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Don't miss **THE FIRST WORLD OF IF!**

She was wonderful and Forsdon was in love. But he'd seen the future and knew that in five days she was slated for murder!

CRONUS OF THE D. F. C.

BY LLOYD BIGGLE, JR.

A BRIGHT, SUNNY day in May, and a new job for me. I found the room in the basement of police headquarters—a big room, with freshly stenciled letters D F C on the door, and an unholy conglomeration of tubes, wires and dials bulking large in one corner.

A bright young police cadet sat at a desk in the center of the room. "Are you Mr. Forsdon?"

I nodded, and dumped my bag beside the desk.

"Captain Marks is waiting for you," he said and jerked his head toward a door to the rear.

Captain Marks had his office in a cubbyhole off the main room. It was quite a comedown from the quarters he'd occupied upstairs as captain of detectives. He'd held onto that job past his retirement age and, when they were about to throw him out on his ear, D. F. C.

Illustrated by Paul Orban

came along and he jumped at it. The Captain was not the retiring type.

His door was open, and he waved me in. "Sit down, Forsdon,"

he said. "Welcome to the Department of Future Crime."

I sat down, and he looked me over. A lean, hard face, closely cropped white hair, and steely grey



eyes that looked through a man, rather than at him. Small—five feet seven, a hundred and forty pounds. You looked at him and wondered how he'd ever gotten on the force in the first place, until you saw his eyes. I'd never felt comfortable in his presence.

"Do you know what we have here, Forsdon?" he said.

"Not exactly."

"I don't either—exactly. The brass upstairs thinks it's an expensive toy. It is. But they've given us a trial budget to see if it works, and now it's up to us."

I nodded, and waited for him to go on. He packed his pipe, lit it, and then leaned back and let the smoke go out.

"We have an invention," he said, "which I don't pretend to understand. You saw the thing?"

"Yes," I said. It wasn't easy to overlook.

"Walker calls it Cronus—for the Greek God of Time. It gives us random glances around the city on what looks like a large TV screen—random glances into the *future!*" He paused for dramatic effect, and I probably disappointed him. I already knew that much. "The picture is hazy," he went on, "and sometimes we have a hell of a time figuring out the location of whatever it is we're looking at. We also have trouble pinpointing the time of an event. But we can't deny the potential. We've been in operation for three weeks, and already we've seen half a dozen holdups days before they happened."

"At least it's an ideal we've always worked for," I offered. "I

mean, to prevent crime, rather than just catch the criminal."

"Oh!" he said, and went to work on his pipe again. "Maybe I didn't make myself clear. We saw the holdups on that screen, but we couldn't *prevent* a single one. All we managed to do was catch the criminal a few minutes after he had committed the crime. So it raises an interesting question: Is it possible to change the future?"

"Why not?" I said.

Captain Marks thought a moment. "It isn't too critical, where the holdups are concerned. The criminal is caught immediately, the loot is recovered, and the victim goes his way thinking kind thoughts about the efficiency of the police force. But what about assault, or rape, or murder? Apprehending the criminal ten minutes later won't be much comfort to the victim. But now that you're here to follow up the leads given us by Cronus—well, we'll see what we can do. Come on. I want you to meet Walker. And Cronus!"

Walker—Dr. Howard F. Walker—was huddled over his creation. There was no doubt about it being his baby, as you could see from the way his hands caressed the dials. He was a gangling-looking man, six feet one, maybe 170 pounds, fifty-odd years old. He had a long neck, an overly pronounced Adam's apple, and thinning hair. He wore thick glasses, his face was gentle and dignified, and he looked like a very tired university professor.

He didn't hear us come up, and the Old Man waited quietly until he noticed us.

"Walker," the Old Man said, "this is Forsdon, our new detective."

He nodded at me. "Cronus has something," he said. "If I can find it again . . ."

He turned to his dials.

"That's one of our problems," Captain Marks said. "Once we focus on a crime, it's sometimes hard to locate it again. The time interval between the present and the time the crime is committed keeps getting less. It takes a different adjustment each time . . ."

His voice trailed away, and I looked from Walker to the six-foot-square screen above his head. Shadows flitted about on the screen. A female shadow walking along the street holding a child shadow by the hand. Shadow air-cars moving along jerkily. A row of male shadows grotesquely posed along a bar, their glasses making bright blotches in the picture. A room, and a female shadow moving around a table. The future revealed by Cronus was a shadow world and the only way you could tell male from female was by their dress.

The scene kept shifting. A park, with trees, and lounging adults, and running children. A room with people seated around a table, a reading room, perhaps at the public library. A large living room, with an old-fashioned fireplace, and a bright blotch that was the fire. Another smaller room, a female shadow . . .

"That's it!" Walker said suddenly. He moved a motion picture camera into position, and pressed a

button. It whirred softly as we watched.

A nondescript living room. A female shadow. She threw up her hands and stood transfixed for a horrible moment or two. A male shadow bounded into the picture—a giant male shadow. She turned to run, and he caught her from behind. His hand moved upward. Something glittered in it, and he brought it down. He struck twice, and the female crumpled to the floor. He whirled, ran toward us, and disappeared. The camera ground on, recording the image of that shapeless shadow on the floor.

Abruptly the scene changed. A restaurant, with crowded tables and jerkily moving robot-servers. Walker swore softly and turned off the camera.

"That's all I got before," he said. "If I could come on it from a different angle, maybe we could locate the place."

"When?" the Captain asked.

"Seven to twelve days."

It hit me, then, like a solid wallop on the jaw. I'd been looking into the future.

"Plenty of time," the Captain said. "But not much to go on." He looked at me. "What do you think?"

"Might be able to identify the man," I said. "He'll be well over six feet—wouldn't surprise me if he were six-eight or nine. He'll have the build of a male gorilla. And he limps slightly with his right foot."

"Not bad. Anything else?"

"It's an apartment or a hotel room," I said. "I'd guess an apart-

ment. The scanner screen by the door means it's either relatively new, or it's been remodeled. The living room has a corner location, with windows on two sides. It's hard to say for certain, but I believe there's an old-fashioned sofa—one of those with a back on it—along the far wall."

Walker slumped into a chair. "You make me feel better," he said. "I thought there was next to nothing to go on."

Captain Marks nodded. "But you missed one thing."

"What's that?"

"Our assailant is left-handed. Also—the limp may be something temporary. All right, Forsdon, it's all yours. Seven to twelve days, and you'd better plan on-seven."

He went back to his office, and I looked at Walker. "Can you give me any idea at all as to the location?"

"I can draw you a circle on the map, but it's only about fifty-fifty that you'll find the place inside the circle."

"That's better than nothing."

"There is one thing," Walker said. "I'd like to have you wear this. Everywhere."

A band of elastic, with what looked like dark beads placed on it at intervals.

"It's an arm band," Walker said. "Cronus picks up these beads as bright spots. So I'll be able to identify you if you show up on the screen."

I hesitated, and he said, "The Captain wears one. We know it works, because Cronus has picked him up twice."

I took the arm band, and slipped it on.

I sat down with the map and a directory and worked until a technician came back with the developed film. Walker was still perspiring in front of Cronus. He hadn't been able to focus on the crime a third time. The Captain's door was closed, and his nasal voice was rattling the door as he bellowed into his telephone. I pulled the curtains to darken one corner of the room, and fed the film into a projection machine.

I ran the film ten times without coming up with anything new. I couldn't make out the number on the door. I also couldn't decide whether the assailant was a chance prowler or someone known to the victim. I stopped the camera, and made a sketch of the room from what I could make out in the way of furnishings.

The Captain came barging out of his office, took a quick look at my sketch, and nodded approval. "We'll find the apartment," he said. "Then our troubles will really start."

I couldn't see that, and I told him so. I figured our troubles would be nearly over if we found the apartment.

"You think it's possible to prevent this crime," he said. "I don't. Even if we find the apartment and identify the man and woman, the crime is still going to happen."

"Why?" I said.

"Look at it this way. If we prevent the crime, it's not going to happen. Right?"

"Right."

"And if it's not going to happen, Cronus wouldn't show it to us. All you see on that screen is what *will* happen. As far as Cronus is concerned, it already has happened. Preventing it is like trying to change the past."

"We can try," I said.

"Yes, we can try. The regular force will help us on this one. A team of detectives is waiting outside. Tell them what you want done."

I wanted an apartment living room with a corner location and a door scanner. It wasn't as bad as it sounded—the scanner was a new gadget at that time. Not many apartment buildings would have it. There was always the chance, of course, that an individual had had one installed on his own, but that was a worry I could postpone.

I put in a hectic day of trudging through apartment buildings and squabbling with superintendents, but we found it the next morning, in a stubby little seven-story building on South Central. It was one of those apartment buildings that went up way back in 1990, when the city decided it couldn't afford the luxury of open spaces and opened part of old Central Park to apartment buildings. This one was a midget among the other buildings in that development, but it had been remodeled recently. It had scanner screens.

After the usual protests, the superintendent showed me around. Most of the occupants weren't home. He let me into a rear apartment on the sixth floor, and I took one look and caught my breath.

I pulled out my sketch, though I had it memorized by this time, and moved across the room to get the right angle. The sofa was there—it *was* an old-fashioned job with a back. What had been a bright blotch in the picture turned out to be a mirror. A blur by the sofa was a low table. A chair was in the wrong place, but that could have been moved. What was I thinking about? *It was going to be moved.* Every detail checked.

"Stella Emerson," the superintendent said. "Miss Stella Emerson—I think. She never gave me no trouble. Something wrong?"

"Not a thing," I said. "I want some information from her."

"I dunno when she's home."

Her next-door neighbor did. I went back to headquarters and picked up the loose ends on the attempt to identify our assailant-to-be. No luck.

And at six o'clock that evening, I was having a cup of coffee with Miss Stella Emerson.

She was the sort of person it's always a joy to interview. Alert, understanding, cooperative—none of that petty, temperamental business about invasion of privacy. She was brunette and twenty-six or twenty-seven, maybe five feet four, a hundred and ten pounds. The pounds were well distributed, and she was darned nice looking.

She served the coffee on the low table by the sofa, and sat back with her cup in her hand.

"You wanted information?" she said.

I fingered my own cup, but I didn't lift it. "I'd like to have you

think carefully," I said, "and see if you've ever known a man who matches this description. He's big, really big. Heavy set. Maybe six feet eight or nine. He's left handed. He might walk with a slight limp in his right foot . . ."

She set her cup down with a bang. "Why, that sounds like Mike—Mike Gregory. I haven't seen him for years. Not since . . ."

I took a deep breath, and wrote "Mike Gregory" in my notebook.

"Where was he when you saw him last?"

"On Mars. I was there for two years with Civil Service. Mike was a sort of general handyman around the administration building."

"Do you know where he is now?"

"As far as I know, he's still on Mars!"

My coffee was scalding hot, but I didn't notice as I gulped it down. "I'd like to know everything you can tell me about this Mike Gregory," I said. "May I take you to dinner?"

As my dad used to say, there's nothing like mixing business with pleasure.

She suggested the place—a queer little restaurant in the basement of a nearby apartment building. There were lighted candles on the tables—the first candles I'd seen since I was a child. The waitresses wore odd costumes with handkerchiefs wrapped around their heads. An old man sat off in one corner scraping on a violin. It was almost weird.

But the food was good, and Stella Emerson was good company. Unfortunately, her mind was on Mike Gregory.

"Is Mike in trouble?" she said. "He always seemed like such a gentle, considerate person."

I thought of the knife-wielding shadow, and shuddered. "How well did you know him?" I said.

"Not too well—he stopped to talk with me now and then. I never saw him except at work."

"Was he—interested in you?"

She blushed. It was also the first blush I had seen in so long I couldn't remember when. I had heard it said that the blush went out when women did away with their two-piece bathing suits and started wearing trunks like the men. I'm telling you, you can't have any idea about what's wrong with our scientific civilization until you've seen a girl blush by candlelight.

"I suppose he was," she said. "He kept asking me to go places with him. I felt sorry for him—he seemed such a grotesque person—but I didn't want to encourage him."

"You're certain about the limp?"

"Oh, yes. It was very noticeable."

"And about his being left-handed?"

She thought for a moment. "No. I'm not certain about that. He could have been, I suppose, but I don't think I ever noticed."

"Is there anything else you remember about him?"

She shook her head slowly. "Not much, I'm afraid. He was just a person who came through the office now and then. He had an odd way of talking. He spoke very slowly. He separated his words, just . . . like . . . this. Most of the girls laughed at him, and when they did

he'd turn around and walk away without saying anything. And—oh, yes, sometimes he'd talk about California. I guess that was where he was from. I never found out anything about his personal life."

"But you didn't laugh at him?"

"No. I couldn't laugh at him. He was just too—pathetic."

"Have you heard from him since you came back?"

"He sent me a Christmas card once. He didn't know my address on Earth, so he sent it to the office on Mars so it would be forwarded. It didn't reach me until July!"

"How long ago was that?"

"It must be four years ago. It was a couple of years after I left Mars."

I dropped Mike Gregory, and tried to learn something about Stella Emerson.

She was twenty-eight. She'd worked for two years on Mars, and then she came back and got a job as private secretary with a small firm manufacturing plastic textiles. She made enough money for her own needs, and was able to save a little. She liked having a place of her own. She had a sister in Boston, and an aunt over in Newark, and they visited her occasionally. She led a quiet life, with books, and visits to the art institutes, and working with her hobby, which was photography.

It all sounded wonderful to me. The quiet life. A detective gets enough excitement on the job. If he can't relax at home, he's going to be a blight on the mortality tables.

We were on our second cup of

coffee, by then, and I motioned the old fiddler over to our table.

His bloodshot eyes peered out over a two-week growth of beard. I slipped him a dollar bill. "How about giving us a melody?"

He gave us a clumsy serenade and Stella reacted just as I'd hoped she would. She blushed furiously, and kept right on blushing, and I just leaned back and enjoyed it.

I took her back to her apartment, and said a friendly farewell at her door. We shook hands!

And she didn't invite me to spend the night with her, which was just as refreshing.

I rode the elevator with chiming bells and a wisp of the old man's music floating through my mind. I stepped out on the ground level, walked dreamily out the door and hailed an aircab with my pocket signal.

And just as I was about to step in, it stabbed me like the flickering knife on Cronus's screen. She was a wonderful girl, and I was falling for her, and in seven to twelve days—no, nearer five to ten days, now—she was going to be murdered.

"Something wrong?" the driver said.

I flashed my credentials. "Police Headquarters," I said. "Use the emergency altitude."

WALKER was crouched in front of Cronus, perspiring, as usual, but looking infinitely more tired. No matter what time I came in, he always seemed to be there, or there was a note saying he was down in his lab in the sub-basement.

"I haven't found it again," he said.

"That's all right. We can manage with what we have."

He frowned irritably. "It's important, confound it. This is just an experimental model, and it's mad-deningly inefficient. With money and research facilities, we could produce one that would really work, but we can't get that kind of support by predicting a few piddling holdups. But a murder, now—that would make someone sit up and take notice."

"Stop worrying about your dratted Cronus," I snapped. "I don't give a damn about that pile of junk. There's a girl's life to be saved."

It was unfair, but he didn't object. "Yes, of course," he said. "The girl's life—but if I can't get more information . . ."

"I've found the apartment," I told him, "and I've found the girl. But the man is supposed to be on Mars. It doesn't figure, but it's something to work on."

I called the Captain, and gave him my report. If he resented my bothering him at home, he didn't show it. Any wheel I could get my fingers on I set turning, and then I went home. I won't pretend that I slept.

By morning we had a complete report from the colonial administration on Michael Rolland Gregory. Fingerprints, photos, detailed description, complete with limp and left-handedness. The works. Also, the added information that he'd resigned his civil service job eight months before and had left im-

mediately for Earth, on a Dawn Liner scheduled to land at San Francisco.

I swore savagely, got off an urgent message to San Francisco, and left for a dinner date with Stella Emerson. And another handshake at her apartment door.

San Francisco did a thorough job, but it took time—two more days. Michael Rolland Gregory had hung around for a while, living in run-down rooming houses, and holding a series of odd jobs. Two months before he had disappeared.

"He could be anywhere by now," I told the Captain.

"Including here in New York," the Captain said dryly.

Two to seven days.

I took Stella back to her apartment after our dinner date, and in front of the door I said, "Stella, I like you."

She blushed wonderfully. "I like you too, Jim."

"Then do me a favor—a very special favor."

Her blush deepened, with an overlay of panic. "I'd—like to, Jim. Because I—like you. But I can't. It's hard to explain, but I've always told myself that unless I marry a man . . ."

I leaned against the wall and laughed helplessly while her eyes widened in amazement. Then I dispensed with the handshaking. She clung to me, and it might have been her first kiss. In fact, it was.

"I don't just like you, darling," I said. "I love you. And that wasn't the favor I was going to ask. You said you have an aunt over in Newark. I want you to stay with her

for a while—for a week or so.”

“But—why?”

“Will you trust me? I can’t tell you anything except that you’re in danger here.”

“You mean—Mike?”

“I’m afraid so.”

“It’s hard to believe that Mike would want to harm me. But if you think it’s important . . .”

“I do. Will you call your aunt, now, and make the arrangements? I’ll take you over tonight.”

She packed some things, and I took her to Newark in an aircab. Her aunt was hospitable and cooperative, albeit a little confused. I checked her apartment thoroughly. I was taking no chances that the aunt’s living room could be the potential scene of the crime. It wasn’t—no similarity.

“Promise me,” I said, “that you won’t go back to your apartment for any reason until I tell you it’s all right.”

“I promise. But I may need some more things.”

“Make a list, and I’ll have a police woman pick them up for you.”

“All right.”

I arranged with the superintendent of her apartment building to have the lights in her apartment turned on each evening, and turned off at an appropriate time. I put a stakeout on her apartment building, and on her aunt’s. I got a detective assigned to shadow her, though she didn’t know it, of course. Then it was zero to five days, and I was quietly going nuts.

Zero to four days. I walked into the D. F. C. room, and Walker swarmed all over me. “I found it

again,” he said.

“Anything new?”

“No. Just the same thing. Exactly the same.”

“When?”

“Two to three days.”

I sat down wearily, and stared at Cronus. The screen was blank. “How did you manage to invent that thing?” I said.

“I didn’t really invent it. I just—discovered it. I was tinkering with a TV set, and I changed some circuits and added a lot of gadgets, just for the hell of it. The pictures I got were darned poor, but they didn’t seem to be coming from any known station—or combination of stations, since they kept changing. That was interesting, so I kept working on it. Then one day the screen showed me a big aircar smashup. There were about ten units involved, and I told myself, ‘Boy, these Class D pictures are really overdoing it.’ About a week later I opened my morning paper, and there was the same smashup on page one. It took a long time to get anybody interested.”

He stopped suddenly as the Captain came charging out of his office.

“Brooklyn,” he called. “Gregory was living in a rooming house in Brooklyn. He left three weeks ago.”

A LEAD with a dead end. No one knew where he’d gone. It proved that he was somewhere in the vicinity of New York City, but I don’t think any of us ever doubted that.

“One thing is interesting,” the Captain said. “He’s using his own

name. No reason why he shouldn't, of course. He's not a criminal—but he is a potential criminal, and *he doesn't know that.*"

I saw, suddenly, that we had a double problem. We had to protect Stella from Gregory, but we also had to protect Gregory from himself. If we could find him.

"There's not much we can do," I said, "but keep on looking."

It was what Walker called the Critical Period. Something had to happen on this day or the next, or Cronus was a monkey's dutch uncle.

"If we could only pick Gregory up and hold him for a couple of days, maybe we could beat this," I told the Captain. "We've eliminated Stella Emerson, we've locked the apartment, and caging Gregory should snap the last thread."

He laughed sarcastically. "You think that would solve the problem? Listen. We spotted a holdup, and I recognized the crook. He had a long record. I had him picked up, and he was carrying a gun so we slapped him in jail on a concealed weapons charge. He escaped, got another gun, and committed the holdup right on schedule. I'm telling you, Cronus shows exactly how the future is. We can't change it. I'm working as hard as anyone else to prevent this, but I know for a certainty that sometime today or tomorrow the girl and Gregory are going to meet in that apartment—or in one exactly like it."

"We're going to change it this time," I said. On my way out I stopped for a good look at Cronus. Nothing but a monster would give

you a murderer, and a victim, and the place and approximate time, and make you completely helpless to do anything about it. I felt like giving Cronus a firm kick in a vital part of its anatomy.

I called off my dinner date with Stella and prowled around Manhattan looking for a big man with a pronounced limp. One speck of dust among the millions. I noticed with satisfaction that I was not alone in my search. Aircars were swooping in low for a quick look at pedestrians. Foot patrolmen were scrutinizing every passerby. And detectives would be making the rounds of the rooming houses and hotels with photographs. Cab and bus drivers would be alerted.

For a man who had no reason to hide, Michael Rolland Gregory was doing an expert job of keeping out of sight.

I radioed police headquarters at 10:00 P.M., and the Captain's voice exploded at me. "Where the hell have you been? The stakeout at the girl's apartment got Gregory. They're bringing him in."

I cut off without any of the formalities, and sprinted. I tore down the corridor to the D. F. C. room, and burst in on what might have been a funeral celebration. Walker sat with his face in his hands, and the Captain was pacing in a tight circle.

"He got away," the Captain snarled. "Snapped the handcuffs like toothpicks, beat up his escort and ran. The man must have the strength of a utility robot."

"How did they happen to pick him up?" I wanted to know.

"He came strolling down the street and started to go into the apartment building. Completely innocent about the whole thing, of course. He didn't have any idea we were looking for him."

"He has now," I said. "It's going to be great sport locating him again."

We had a small army loose in the area where Gregory escaped, but for all they found he might have burrowed into the pavement. I called Stella and asked her to stay home from work the next day. I got the stakeout on her aunt's apartment doubled.

I was up at dawn, prowling the streets, riding in patrolling aircars, and I suppose generally making a nuisance of myself with calls to headquarters. We put in a miserable day, and Gregory might have been hiding on Mars, for all the luck we had.

I had my evening meal at a little sandwich shop, and did a leisurely foot patrol along the street by Stella's apartment building. The stakeout was on the job, and the superintendent had Stella's lights on. I stood for a moment in the doorway, watching the few pedestrians, and then I signaled an aircab.

"I'd like to circle around here a bit," I said.

"Sure thing," the cabbie said.

We crisscrossed back and forth above the streets, and I squinted at pedestrians and watched the thin traffic pattern. Fifteen minutes later we were back by the apartment building.

"Circle low around the building," I said.

"Oh, no! Want me to lose my license? I can't go out of the air lanes."

"You can this time," I said. "Police."

He looked at my credentials, and grunted. "Why didn't you say so?"

There was a narrow strip of lawn behind the building, with a couple of trees, and then a dimly-lit alley. The cabbie handed me a pair of binoculars, and I strained my eyes on the sprawling shadows. I couldn't see anything suspicious, but I decided it might be worth a trip on foot.

The third time around I glanced at Stella's lighted windows—the rear ones—and gasped. A dark shadow clung to the side of the building, edging slowly along the ledge towards her window. Gregory.

"See that?" I said to the cabbie.

As we watched, he got the window open, and disappeared into the apartment.

I tried to radio the men on the stakeout, and couldn't rouse them. I called headquarters. Both Walker and Captain Marks were out. They would be back in a few minutes. But I didn't have minutes left.

"Skip it," I said. I snapped out a description of the situation, and cut off.

"Can you get close enough to get me through that window?" I asked the cabbie.

"I can try," he said. "But watch your step, fellow. It's a long drop."

He hovered close, and I grabbed the edge of the window and pulled myself through. Gregory faced me across the living room, a bewil-

dered, panicky look on his huge, child-like face. I was thinking, how stupid can we get? From the way he came into Cronus's picture we should have known he didn't come through the door. Stella had come through the door, and we just assumed he was already in the room. But who would have thought Gregory could make like a human fly?

"All right, Gregory," I said. "You're under arrest."

Tears streaked his face. His jaw moved, but no sound came out. Suddenly I saw how we had blundered. This grotesquely oversized child meant no harm to anyone. Stella was the only person he'd ever known who treated him like a human being, and he wanted to see her again. For some reason he couldn't understand, the police were trying to prevent that. Suddenly the entire universe was against him, even Stella, and he was frightened.

And dangerous.

He lunged at me like a pile driver, and forced me back towards the open window. I got my gun out, and he just casually knocked it out of my hand. He had me on the window ledge, forcing me back and all I could see were the stars out in space.

Then the apartment door opened and closed and Gregory glanced back over his shoulder.

I screamed. "Run, Stella! Run—"

Then the night air was whistling past me. I bounced off an awning, crashed into the branches of a tree, struggled frantically for a hold, and fell through. From the window

above came a piercing scream . . .

THE DOCTOR had a face like an owl, and he bent over me, making funny clucking noises with his tongue. "There we are," he said, when he saw my eyes open. "Not bad at all."

"What's good about it?" I said.

"Young man, you fell six stories, and all you have is a broken leg and assorted bruises. You ask me what's good about it?"

"You wouldn't understand," I said. "Beat it." Stella's scream still rang in my ears. I twisted, and felt the heavy cast on my left leg. My mood merged and blended with the dull grey of the hospital room.

A nurse came tiptoeing in, and smiled blandly when she saw I was awake. "You have some visitors," she said. "Do you want to see them?"

I knew it was the Captain. I hated to face him, but I said, "Let's get it over with."

The Captain loomed in the doorway, backed away, and came in again. And ahead of him walked Stella.

A different Stella—face pale and distorted, eyes registering shock and grief, but alive. But very much alive.

I started to get up, and the nurse placed a firm hand on each shoulder and held me to the bed. "Not so fast, sonny boy," she said.

Captain Marks moved up a chair for Stella. "Jim," she said. Her voice broke.

"I'll tell him," the Captain said. "It seems that Miss Emerson has a

sister living in Boston. She didn't know anything about our problem, and she came down this evening for a visit. She had a key to Miss Emerson's apartment, and she walked in just at the right time to play a leading role in Cronus's drama."

"Was she—"

"No. Thankfully, no. Her condition is serious but she'll be all right again. The knife missed a vital spot by a fraction."

I relaxed. "What happened to Gregory?"

"He tried to go out the way he came in. There wasn't any tree to break his fall. And one other thing. I have an urgent message for you from Walker."

I glanced at the slip of paper. "Jim—for God's sake, stay out of aircars!"

"Cronus showed us your fall half an hour before it happened. From our angle, it looked as if you fell out of the aircab that was hovering over the building. Some time in the next twenty-four hours, Walker calculated, but we couldn't reach you."

"It wouldn't have made any difference," I said. "You know yourself . . ."

"Yes," he said. "I know."

His voice rambled on, while my eyes met Stella's. "So Cronus can show us the future," I heard him say, "but he can't change it, and neither can we."

"Cronus changed mine," I said,

still looking at Stella.

The Captain took the hint, and left.

Five minutes later the phone rang, and I reached around Stella to answer it. It was Walker, and Stella held her face close to mine and listened.

"Just called to offer my congratulations," Walker said.

"Congratulations for what?"

"For your wedding. Cronus just spotted it."

I swore, but I kept it under my breath. "I haven't even asked the girl," I said, "and don't tell me I'm wearing that stupid arm band at my wedding, because I'm not."

"No, you're on crutches. But the Captain is standing up with you, and he's wearing his."

"All right," I said. "When is this glad event going to take place?"

"Four to eight days."

I slammed down the receiver, and kissed Stella's blushing face. "Cronus says we're getting married in four to eight days, and this is one time that monstrosity's going to be wrong. We'll get married tomorrow."

"All right, Jim, if you want to. But . . ."

"But what?"

"This is May twenty-eighth, and I want to be a June bride."

We were married five days later, and we went to Arizona on our honeymoon. I'd done some checking, and I knew Arizona was well outside of Cronus's range. ● ● ●

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T H E R U M B L E

The noise was too much for him.

He wanted quiet—at any price.

BY STEPHEN BARTHOLOMEW

WHEN JOSEPH got to the office his ears were aching from the noise of the copter and from his earplugs. Lately, every little thing seemed to make him irritable. He supposed it was because his drafting department was behind schedule on the latest Defense contract. His ears were sore and his stomach writhed with dyspepsia, and his feet hurt.

Walking through the clerical office usually made him feel better. The constant clatter of typewriters and office machines gave him a sense of efficiency, of stability, an all-is-well-with-the-world feeling. He waved to a few of the more familiar employees and smiled, but of course you couldn't say hello with the continual racket.

workers, so Joseph was no one to object, even though he did wonder if anyone could ever actually listen to it over the other noise.

In his own office the steady din was hardly diminished despite soundproofing, and since he was next to an outside wall he was subjected also to the noises of the city. He stood staring out of the huge window for awhile, watching the cars on the freeway and listening to the homogeneous rumble and scream of turbines.

Something's wrong with me, he thought. *I shouldn't be feeling this way. Nerves. Nerves.*

He turned around and got his private secretary on the viewer. She simpered at him, trying to be friendly with her dull, sunken eyes.

AND THE ROAR

This morning, somehow, it didn't make him feel better. He supposed it was because of the song they were playing over the speakers, "Slam Bang Boom," the latest Top Hit. He hated that song.

Of course the National Mental Health people said constant music had a beneficial effect on office

"Betty," he told her, "I want you to make an appointment with my therapist for me this afternoon. Tell him it's just a case of nerves, though."

"Yes sir. Anything else?" Her voice, like every one's, was a high pitched screech trying to be heard above the noise.

Joseph winced. "Anybody want to see me this morning?"

"Well, Mr. Wills says he has the first model of his invention ready to show you."

"Let him in whenever he's ready. Otherwise, if nothing important comes up, I want you to leave me alone."

"Yes sir, certainly." She smiled again, a mechanical, automatic smile that seemed to want to be something more.

Joseph switched off.

That was a damn funny way of saying it, he thought. "I want you to leave me alone." *As if somebody were after me.*"

He spent about an hour on routine paperwork and then Bob Wills showed up so Joseph switched off his dictograph and let him in.

"I'm afraid you'll have to make it brief, Bob," he grinned. "I've a whale of a lot of work to do, and I seem to be developing a splitting headache. Nerves, you know."

"Sure, Mister Partch. I won't take a minute; I just thought you'd like to have a look at the first model of our widget and get clued in on our progress so far . . ."

"Yes, yes, just go ahead. How does the thing work?"

Bob smiled and set the grey steel chassis on Partch's desk, sat down in front of it, and began tracing the wiring for Joseph.

It was an interesting problem, or at any rate should have been. It was one that had been harassing cities, industry, and particularly air-fields, for many years. Of course, every one wore earplugs—and that helped a little. And some firms had

partially solved the problem by using personnel that were totally deaf, because such persons were the only ones who could stand the terrific noise levels that a technological civilization forced everyone to endure. The noise from a commercial rocket motor on the ground had been known to drive men mad, and sometimes kill them. There had never seemed to be any wholly satisfactory solution.

But now Bob Wills apparently had the beginnings of a real answer. A device that would use the principle of interference to cancel out sound waves, leaving behind only heat.

It should have been fascinating to Partch, but somehow he couldn't make himself get interested in it.

"The really big problem is the power requirement," Wills was saying. "We've got to use a lot of energy to cancel out big sound waves, but we've got several possible answers in mind and we're working on all of them."

He caressed the crackle-finish box fondly.

"The basic gimmick works fine, though. Yesterday I took it down to a static test stand over in building 90 and had them turn on a pretty fair-sized steering rocket for one of the big moon-ships. Reduced the noise-level by about 25 per cent, it did. Of course, I still needed my plugs."

Joseph nodded approvingly and stared vacantly into the maze of transistors and tubes.

"I've built it to work on ordinary 60 cycle house current," Wills told him. "In case you should want to

demonstrate it to anybody."

Partch became brusque. He liked Bob, but he had work to do.

"Yes, I probably shall, Bob. I tell you what, why don't you just leave it here in my office and I'll look it over later, hm?"

"Okay, Mr. Partch."

Joseph ushered him out of the office, complimenting him profusely on the good work he was doing. Only after he was gone and Joseph was alone again behind the closed door, did he realize that he had a sudden yearning for company, for someone to talk to.

Partch had Betty send him in a light lunch and he sat behind his desk nibbling the tasteless stuff without much enthusiasm. He wondered if he was getting an ulcer.

Yes, he decided, he was going to have to have a long talk with Dr. Coles that afternoon. Be a pleasure to get it all off his chest, his feeling of melancholia, his latent sense of doom. Be good just to talk about it.

On, everything was getting to him these days. He was in a rut, that was it. A rut.

He spat a sesame seed against the far wall and the low whir of the automatic vacuum cleaner rose and fell briefly.

Joseph winced. The speakers were playing "Slam Bang Boom" again.

His mind turned away from the grating melody in self defense, to look inward on himself.

Of what, after all, did Joseph Partch's life consist? He licked his fingers and thought about it.

What would he do this evening

after work, for instance?

Why, he'd stuff his earplugs back in his inflamed ears and board the commuter's copter and ride for half an hour listening to the drumming of the rotors and the pleading of the various canned commercials played on the copter's speakers loud enough to be heard over the engine noise and through the plugs.

And then when he got home, there would be the continuous yammer of his wife added to the Tri-Di set going full blast and the dull food from the automatic kitchen. And synthetic coffee and one stale cigaret. Perhaps a glass of brandy to steady his nerves if Dr. Coles approved.

Partch brooded. The sense of foreboding had been submerged in the day's work, but it was still there. It was as if, any moment, a hydrogen bomb were going to be dropped down the chimney, and you had no way of knowing when.

And what would there be to do after he had finished dinner that night? Why, the same things he had been doing every night for the past fifteen years. There would be Tri-Di first of all. The loud comedians, and the musical commercials, and the loud bands, and the commercials, and the loud songs . . .

And every twenty minutes or so, the viewer would jangle with one of Felicia's friends calling up, and more yammering from Felicia.

Perhaps there would be company that night, to play cards and sip drinks and talk and talk and talk, and never say a thing at all.

There would be aircraft shaking the house now and then, and the

cry of the monorail horn at intervals.

And then, at last, it would be time to go to bed, and the murmur of the somnolearner orating him on the Theory of Groups all through the long night.

And in the morning, he would be shocked into awareness with the clangor of the alarm clock and whatever disc jockey the clock radio happened to tune in on.

Joseph Partch's world was made up of sounds and noises, he decided. Dimly, he wondered of what civilization itself would be constructed if all the sounds were once taken away. *Why*, after all, was the world of Man so noisy? It was almost as if—as if everybody were making as much noise as they could to conceal the fact that there was something lacking. Or something they were afraid of.

Like a little boy whistling loudly as he walks by a cemetery at night.

Partch got out of his chair and stared out the window again. There was a fire over on the East Side, a bad one by the smoke. The fire engines went screaming through the streets like wounded dragons. Sirens, bells. Police whistles.

All at once, Partch realized that never in his life had he experienced real quiet or solitude. That actually, he had no conception of what an absence of thunder and wailing would be like. A total absence of sound and noise.

Almost, it was like trying to imagine what a negation of *space* would be like.

And then he turned, and his eyes fell on Bob Wills' machine. It could

reduce the noise level of a rocket motor by 25 per cent, Wills had said. Here in the office, the sound level was less than that of a rocket motor.

And the machine worked on ordinary house current, Bob had said.

Partch had an almost horrifying idea. Suppose . . .

But what would Dr. Coles say about this, Partch wondered. Oh, he had to get a grip on himself. This was silly, childish . . .

But looking down, he found that he had already plugged in the line cord. An almost erotic excitement began to shake Joseph's body. The sense of disaster had surged up anew, but he didn't recognize it yet.

An absence of *sound*? No! Silly!

Then a fire engine came tearing around the corner just below the window, filling the office with an ocean of noise.

Joseph's hand jerked and flicked the switch.

And then the dream came back to him, the nightmare of the night before that had precipitated, unknown to him, his mood of foreboding. It came back to him with stark realism and flooded him with unadorned fear.

In the dream, he had been in a forest. Not just the city park, but a *real* forest, one thousands of miles and centuries away from human civilization. A wood in which the foot of Man had never trod.

It was dark there, and the trees were thick and tall. There was no wind, the leaves were soft underfoot. And Joseph Partch was all alone, *completely* alone.

And it was—quiet.

Doctor Coles looked at the patient on the white cot sadly.

"I've only seen a case like it once before in my entire career, Dr. Leeds."

Leeds nodded.

"It is rather rare. Look at him—total catatonia. He's curled into a perfect foetal position. Never be the same again, I'm afraid."

"The shock must have been tremendous. An awful psychic blow, especially to a person as emotionally disturbed as Mr. Partch was."

"Yes, that machine of Mr. Wills

is extremely dangerous. What amazes me is that it didn't kill Partch altogether. Good thing we got to him when we did."

Dr. Coles rubbed his jaw.

"Yes, you know it is incredible how much the human mind can sometimes take, actually. As you say, it's a wonder it didn't kill him."

He shook his head.

"Perfectly horrible. How could any modern human stand it? Two hours, he was alone with that machine. Imagine—*two hours* of total silence!"

• • •

THE OLD GOAT

(Continued from page 68)

sion occurs. Now we shall send our animate object."

He untied the goat and, with some difficulty, hauled the animal by its collar to the transmitter. There the goat balked and Dr. Angstrom, having got its head through the door, got behind it and shoved heartily, hanging onto the edge of the door so he could shut it quickly when the goat was inside.

As goats will, the goat suddenly changed its mind and leaped into the transmitter. Caught off balance, Dr. Angstrom fell in after it—and the door, given a last frantic jerk, slammed on them both.

There were gasps of horror and

alarm from the scientists, but I held up my hand to calm them.

"There's no danger, gentlemen," I said. "It's just as well this way. I happen to know that Dr. Angstrom's next step, after proving to you with the goat that animate objects could be transmitted, was to prove that human beings also could be transmitted. He planned to be his own first subject."

With serene confidence, I went to the receiver and threw open the door. Just as I had anticipated, the goat leaped out, unharmed, followed by Dr. Angstrom.

"I told you animate objects could be transmitted successfully," said the goat triumphantly.

"Baa!" said Dr. Angstrom, and began eating the tablecloth. • • •

WHAT IS YOUR SCIENCE I.Q.?

ANSWERS: 1—Allotropy. 2—Wind velocity. 3—3. 4—31. 5—Heat. 6—96,500. 7—Auxins. 8—All part of a neuron. 9—Mesozoic. 10—Thigmotropism. 11—Maximum entropy. 12—2. 13—Evection. 14—Amalgam. 15—Metamorphic. 16—Polarization. 17—Hydrogen-ion. 18—Specific gravity. 19—Saphrophytism. 20—Electrical resistance.

WAR GAME

(Continued from page 81)

conference table and drifted out of the big spheroid room to their families, wives—wherever they wanted to go.

Now only Thompson and the Russian remained in the room. They walked ten paces away from one another in the classic tradition of honorable dueling, turned, and fired. They fell almost at the same time. Morten rushed over to Thompson who was already dead, having died instantly with a bullet in his heart. Morten saw that the Russian had a bullet hole just above his left eye.

Thompson, foreseeing this possible situation, had gotten a promise from Morten that he would press the button that would annihilate Russia, in case Thompson was dead or incapacitated. That would leave the United States the sole victor in the last great global struggle to establish once and for all, world wide, the true faith.

Morten fought a brief struggle with his conscience, then ran out of the room, leaving the console untouched. The United States and Russia still survived. Morten's family was still safe. He ran toward the bank of elevators to get out of the Cellar. He hadn't been out of the Cellar for a long, long time.

The President of the United States switched off the T.V., and poured another martini. "You want another?" he asked the Minister of Peace. "No, sir, Mr. President."

For a while they said nothing as they looked out the window at the peaceful sunshine, and watched birds settle in the trees.

"They ran their own course," the Minister of Peace said. "Just the same, it was an unpleasant thing to see."

"Inevitable," said the President. "There wasn't any other possible way to handle them."

Psychiatry would never have altered their rigid mold, he knew. It was a strangely funny thing, that spontaneous rebellion all over the world. The people putting a stop to the whole damn vicious historical show. But they had done it. The lie had been given to all the historical pessimists like Spencer and Toynbee and Marx and all the others who had said the same things, whether they really had admitted it or not. The people, acting out of intuitive realization that they faced annihilation, had reacted *en masse* and taken things over for themselves. Now you couldn't find even a water pistol anywhere in the world.

The U.N. Cellar had been walled off, turned into a kind of sanitarium. Its occupants had never known the truth about the outside. Thompson and that absurd Russian were dead. But what about the others in the Cellar, living there still and believing they were the only few survivors left in the world?

Poor bastards, the President thought. And then he thought of that statement by Sartre. The one about hell being a restaurant where you served yourself

• • •



The army is looking for a throw-away engine to power its light-weight combat vehicles, hoping to find an engine cheaper to abandon when it breaks down than to repair. The need for such an engine, together with faster and lighter vehicles, has been brought about by changes in modern warfare. Emphasis today is on getting troops where needed in a hurry. An ideal engine would be a super powerplant giving one horsepower per cubic inch of displacement, one horsepower per pound of weight, and costing less than one dollar per horsepower. The answer to the military problem lies in the engine that could be "factory tested, sealed, issued and written off". A promising engine for the future is the small gas turbine, operating on regenerative cycles.

Rice fields of the future may look like stagnant ditches. Use of algae, the lowly forms of plant life that fix nitrogen from the air, to transmit food to rice plants and other crops of economic value is advocated by Dr. Mary Belle Allen of the University of California. She has succeeded in cultivating a group of nitrogen-fixing organisms known as blue-green algae. Under green-

house conditions, these organisms can promote growth of rice plants that would not thrive without them. Tests show that rice plants grown in sand and nutrient chemicals will not grow without the photosynthetic help of the blue-green algae. The possibility of improving rice crops by flooding the paddies with the algae would aid the world's production immeasurably and certainly reduce starvation statistics in critical areas.

Amateur radio operators or hams can help track the earth satellite to be launched during the International Geophysical Years starting July 1. The signal sent out at 108 megacycles by the moonlet's three-pound transmitter should be detectable over much of the United States, and amateurs could make a real contribution by setting up equipment to listen in. Such a ham network would not only back up the main system of Minitrack antennas, but would also allow nearly vertical observations of the satellite at some station during each orbit. Calibration of the tracking system is expected to be the most difficult job. For the amateur tracking installation, two antennas would be set up 500 to 1000 feet apart on an east-west line in a field remote from population centers, industrial plants, busy highways and other sources of radio noise. By comparing the path length from the satellite's transmitter to one station with a path length to a second antenna, the satellite's position in its earth-girdling orbit can be found.

A monkey's bone marrow may some day be used to save the life of a person doomed by fatal disease or atomic radiation. Monkey bone marrow, transplanted or injected into the body, will go on functioning as a blood cell factory, producing monkey blood cells to circulate through the human arteries and veins. While human application is in the future, at the A.E.C. Oak Ridge Laboratory in Tennessee, the bone marrow of a rat has saved the life of a mouse. From this experiment may come the knowledge of the genesis of radiation-caused leukemia. The bone marrow treatment will prevent this leukemia in mice if given right after the radiation. The day of the crucial experiment of putting marrow from animal into a human may be far distant, but when the problem of which animal to use as a source of supply is solved, the method may be used to treat victims of bone marrow disease and perhaps to allow larger, more effective doses of X-rays or other radiation treatment.

Scientists have taken a long look into the future and come up with this picture of tomorrow's merchant fleet: Fishing vessels will be floating factories remaining at sea all year. Finished products will go straight from ship to market. Mining ships will drill for oil on continental shelves far from their sources of fuel and supplies. Rough weather will not cause seasickness on tomorrow's atomic vessel. Ships will simply submerge beneath the waves into undisturbed waters. Ice-breakers will be able to smash

through Arctic ice packs and remain locked in frozen waters all winter if necessary, because space which would be used for fuel today can be used for food tomorrow. These predictions are based on known advantages of atomic power.

Patients of the future may have their drugs built to order. One such drug has already been synthesized and found to reduce blood pressure in patients with hypertension. The drug named BAS is related to serotonin, a natural body chemical found in blood serum, and was devised to block serotonin's action in the body. In the designing of the drug, researchers had to make it effective when taken by mouth, with a low inhibition index and not reversible in its action, and lacking effect on the central nervous system. Future man-designed drugs may have many other such features planned right into them before production begins.

Atomic energy may turn the Antarctic into a seventh habitable continent. Sir Raymond Priestly, who accompanied Shackleton to the Antarctic in 1908, foresees that frozen mass as the world's surplus food locker as well as a great mining area. It would provide a vermin-free store for periodical food surpluses, where they could be preserved against the need of future generations. Once mineral deposits are found, the entire mining operation could be moved underground. Atomic power could be used to maintain populations. Antarctic gales might also be harnessed as

another source of power; making it practically self sufficient.

A solid fuel, neither coal nor asphalt, may soon be on the market. Latest mining and transportation methods are put to use in a new processing plant, to be completed in the near future, which will make high purity coke out of an unusual geological formation found near Salt Lake City. The formation, known as Uintaite, is of hydrocarbon origin. Black, like coal, it contains more resin and less sulphur than asphalt. Petroleum-like by-products, similar to those from oil shale, are expected to be recovered in the coking process. Several companies have joined together to adapt the hydrocarbon mineral to fuel use. They have renamed it Gilsonite.

Tornados will warn of their approach with a scream on a loud-speaker if plans of the U.S. Weather Bureau are successful. The technique, known as Doppler radar, spots the target by its relative speed and the output of such radar is in the audible range. One aim is to spot the tornado before its swooping funnel, so lethal where it sweeps the ground, is formed. Its high winds, thought to whirl at speeds up to 300 miles per hour, would contrast with those of the surrounding air to produce the audible sound on Doppler radar. Moisture carried by the winds would reflect the radar waves. A simplified model is now being tested, using two 30-inch antennas with an output of five watts. This

device has scanned the clouds and, when conditions are good, has shown turbulent motion within them. Their design will be improved for an operational instrument that will soon be field tested.

By 1980 the world's scheduled airlines will be flying 480,000,000,000 passenger miles annually. This thirteenfold increase over today's mileage will come about through the use of atomic freighters flying non-stop between any two points on the earth's surface at supersonic speeds of 1,000 miles per hour. Passenger planes will be capable of traveling 600 miles per hour, carrying 150 passengers on non-stop flights of up to 4,000 miles. And civil transport aircraft, weighing upward of 1,000,000 pounds and powered by the atom, will be in regular service.

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Hue AND Cry

Sir:

I am writing in reference to the letter of Mr. S. Earl Cohen, printed in the October issue, and concerning the proposed earth satellite. I would like to remark that Mr. Cohen has decreased the force of his argument in favor of a spherical satellite by one-quarter, due to a 25% error in his volumetric calculations. I quote: ". . . the satellite announced by the department of defense, having a diameter of about 2½ feet would have an easily computable volume of 10602.873000 plus, cubic inches. . ." My computations follow:

- 1) Vol. of sphere = $\frac{4}{3} \pi r^3$
- 2) Simplifying:

$$V = \frac{4}{3} \pi r^3 \quad \frac{4}{3} \pi \frac{d^3}{2} = \frac{\pi d^3}{6}$$
- 3) $\frac{\pi}{6} \times 0.523598776$ (value taken from a set of standard engineering tables)

$$4) d^3 = (2.5 \text{ ft})^3 = (30 \text{ in})^3 = 27000 \text{ in}^3$$

$$5) \text{ Substituting:}$$

$$\frac{\pi d^3}{6} = (0.523598776) 27000 =$$

$$14,137.166952 \text{ in.}^3$$

The percent discrepancy between my calculations and those of Mr. Cohen may then be computed:

$$\frac{\% \text{ error} = 14,137.166952 - 10,602.873000}{14137.166952} \times 100$$

$$= 25.01 \%$$

This is rather a large error.

Sincerely,
Neil L. Coleman
University of Chicago

Dear Mr. Quinn:

Gathering the abnormal usage of abbreviation in letters to your office indicates concern for time and space, I will follow suit:

As for your mag. going bi.-mo., What the H? How many of your buyers are in a big hurry to eat steak the day after Thanksgiving? I'm all for the extra time to digest your mag. cov-to-cov. Most publ. I've read fall between cotton candy and hot dogs. "IF" is Thanksgiving!

—R.L.S.
Upland, California

Dear Mr. Quinn:

I'm impelled to submit a rejoinder to Mr. Zwicky's interesting views on evolution in the October Hue and Cry section.

He asks, "If we have evolved physically, why hasn't something been found reasonably close to our present shape?"

One theory was advanced by anthropologist Ruth Moore at a lecture I was privileged to attend at the University of Illinois. She spoke

of experiments on rats and monkeys in which it was discovered that if an incision were made to prevent the further growth of the jaw early in life, in compensation for the reduced weight of the jaw, the characteristic brow ridge would disappear. An additional compensation for this modified jaw structure (in monkeys) would be an increased ability to hold the head erect, thus giving greater mobility to the "hands". Only one gene change would be necessary to effect this state of affairs—a single mutation which would eventually result in greater cranial capacity, which is Man's distinguishing trademark. Hence there is small cause for wonder that the transformation from ape to Man was so swift and that there is such scant visible record.

His second question concerns the intelligence of *Homo Sapiens*, which to his way of thinking, has undergone no appreciable improvements since the dawn of the race. How does one account for the fact that they used Sanskrit, a tremendously complex language? Or that the oldest extant writings show no less intelligence than that presently current?

We know that language has been evolving toward greater simplicity. What point is there in using a dozen words when one will do? Is a more complicated language more efficient? Does it make communication easier? I question the supposition that the writers are as intelligent as ourselves because they wrote in a more complex way.

I would not suggest that we close our minds to all but the evolution-

ary theory; but before we dismiss its validity let us have reasonable grounds for doing so.

—Anne Bartlett
Chester Springs, Pa.

Editor:

Mr. Ryder, in a public letter in *Hue and Cry*, made it clear that he objects to the humanists proclaiming the liberal arts as the only valid guides for man and to their blaming the scientists for Man's social ills.

You followed his letter with the comment that what he said had all the earmarks of a good controversy.

I say no controversy exists other than that between what the humanists proclaim and what they do. They proclaim the liberal arts and yet join all of us in wanting more of the fruits which stem from scientific method rather than from the liberal arts.

Concerning the humanists blaming the scientists for the social ills, such have been the tactics of obsolescent social leaders down through the ages when cultural evolution demanded new qualifications in the social leaders. Unable to meet the new qualifications, the traditional leaders condemn the potential of the emerging leaders who are qualified.

The humanists are a fading facet of Man's society. They represent the classical Greek in a culture that uses Schenectady Greek. They are the horses in an automotive age. They are cultural survivals no longer of importance, but neither they nor the majority of the populace know it; therefore the humanists continue to maintain their social

position on the precarious foundation of ignorance. Let them be happy while they can; they will soon be obsolete.

—G. W. Meek
Beaumont, Texas

Dear Mr. Quinn:

Happy Herd is nearly a classic on the conformist theme. Could author Walton be persuaded to develop this story to novel length for the paperback trade? Elsewhere in your October issue are more good stories than usual; unfortunately you have a weakness for stories with a shocking downbeat ending—they may be very well written but do not leave a good taste and are seldom chosen for re-reading. I wouldn't doubt that this fact prevents IF from rating higher than it otherwise might.

A gripe: Corbow's Theory . . . somebody should tell author Wallot about high school physics. Spinning a bullet doesn't increase muzzle velocity in the slightest, decreases it by friction, in fact. Spin merely helps accuracy and helps maintain velocity by diminishing the tendency to "tumble" end-over-end.

Re Hue and Cry: certainly you can square "c" or cube it or whatever you want, and convert your units to make the results consistent. C-squared, however, is not a velocity in any units, any more than distance squared is still distance; whether in miles or microns, once you square it, it's area.

Just let those boring dictators rest, and I'll remain

—F. M. Busby
Seattle, Washington

EDITOR'S REPORT

(Continued from page 3)

Captain for the ship's paper that they gave him a job as Combat Correspondent. He was transferred to Leatherneck Magazine as a staff-writer and later received a citation from Admiral Nimitz for his coverage of the Iwo Jima and Okinawan campaigns. In 1945 he took up fiction writing full time and has been writing full time ever since.

He insists he is not a big production writer, but that he turns out so much material only because he spends practically all of his time over an electric typewriter. He enjoys writing so much, and spends so much time with it, he says, because his fictional worlds and characters are the only ones he really feels comfortable with, or who make any kind of sense, and if they don't make any sense, they always make logical nonsense.

At present, he is living with his wife in Manhattan, and working on a third novel while trying to dig up some original ideas for science fiction. "If someone could write about reality the way it really is," he says, "that would be the end of science-fiction. It would be more horrible than 1984 and at the same time more beautiful than the young H. G. Wells' dreams of Utopia."

And don't forget THE FIRST WORLD OF IF! The edition is rather limited, and if your news dealer doesn't get copies be sure to write for yours. On page 46 you'll find more details about this exciting science fiction treat. —jlg



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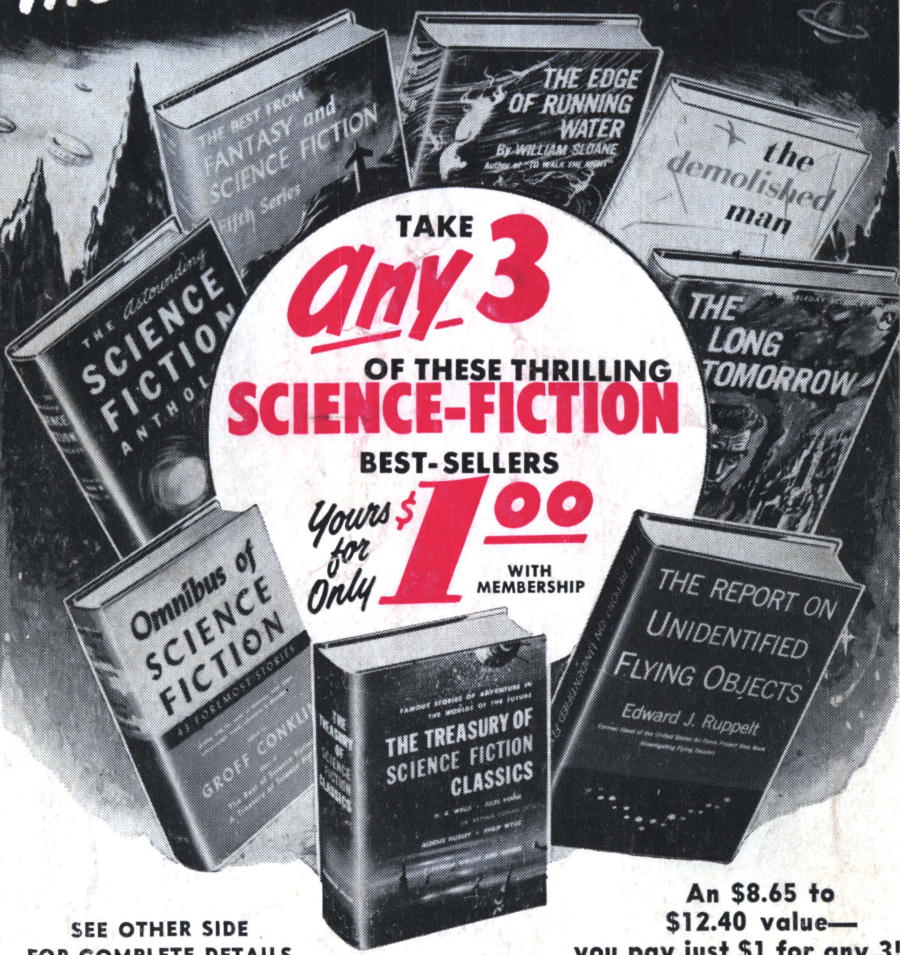
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