

The Fifth-Dimension Catapult
BY MURRAY LEINSTER

FOREWORD

THIS STORY has no normal starting place, because there are too many places where it might be said to begin. One might commence when Professor Denham, Ph.D., MA., etc., isolated a metal that scientists have been talking about for many years without ever being able to smelt. Or it might start with his first experimental use of that metal with entirely impossible results. Or it might very plausibly begin with an interview between a celebrated leader of gangsters in the city of Chicago and a spectacled young laboratory assistant who had turned over to him a peculiar heavy object of solid gold and very nervously explained, and finally managed to prove, where it came from. With also impossible results, because it turned "King" Jacaro, lord of vice-resorts and rum-runners, into a passionate enthusiast in nonEuclidean geometry. The whole story might be said to begin with the moment of that interview.

But that leaves out Smithers, and especially it leaves out Tommy Reames. So, on the whole, it is best to take up the narrative at the moment of Tommy's first entrance into the course of events.

CHAPTER I

He came to a stop in a cloud of dust that swirled up to and all about the big roadster and surveyed the gate of the private road. The gate was rather impressive. At its top was a sign, "Keep Out!" Halfway down was another sign, "Private Property. Trespassers Will Be Prosecuted." On one gate-post was another notice, "Live Wires Within," and on the other a defiant placard, "Savage Dogs At Large Within This Fence."

The fence itself was all of seven feet high and made of the heaviest of woven-wire construction. It was topped with barbed wire, and went all the way down both sides of a narrow right of way until it vanished in the distance.

Tommy got out of the car and opened the gate. This fitted the description of his destination, as given him by a brawny, red-headed filling-station attendant in the village some two miles back. He drove the roadster through the gate, got out and closed it piously, got back in the car and shot it ahead.

He went humming down the narrow private road at forty-five miles an hour. That was Tommy Reames's way. He looked totally unlike the conventional description of a scientist of any sort—as much unlike a scientist as his sport roadster looked unlike a scientist's customary means of transit—and ordinarily he acted quite unlike one. As a matter of fact, most of the people Tommy associated with hadn't the faintest inkling of his taste for science as an avocation. There was Peter Daizell, for instance, who would have held up his hands in holy horror at the idea of Tommy Reames's being the author of that article in the Philosophical Journal, "On the Mass and Inertia of the Tesseract," which had caused such a controversy.

And there was one Mildred Holmes—of no importance in the matter of the Fifth-Dimension Catapult—who would have lifted beautifully arched eyebrows in bored unbelief if anybody had suggested that Tommy Reames was that Thomas Reames whose "Additions to Herglotz's Mechanics of Continua" produced such diversities of opinion in scientific circles. She intended to make Tommy propose to her some day, and thought she knew all about him. And everybody, everywhere, would have been incredulous of his present errand.

Gliding down the narrow, fenced-in road, Tommy was a trifle dubious about this

errand himself. A yellow telegraph-form in his pocket read rather like a hoax, but was just plausible enough to have brought him away from a rather important tennis match. The telegram read:

PROFESSOR DENHAM IN EXTREME DANGER THROUGH EXPERIMENT

BASED ON YOUR ARTICLE ON DOMINANT COORDINATES YOU ALONE CAN

HELP HIM IN THE NAME OF HUMANITY COME AT ONCE.

A. VON HOLTZ.

The fence went on past the car. A mile, a mile and a half of narrow lane, fenced in and made as nearly intruder-proof as possible.

"Wonder what I'd do," said Tommy Reames, "if another car came along from the other end?"

He deliberately tried not to think about the telegram any more. He didn't believe it. He couldn't believe it. But he couldn't ignore it, either. Nobody could; few scientists, and no human being with a normal amount of curiosity. Because the article on dominant coordinates had appeared in the Journal of Physics and had dealt with a state of things in which the normal coordinates of everyday existence were assumed to have changed their functions; when the coordinates of time, the vertical, the horizontal and the lateral changed places and a man went east to go up and west to go down and ran his street numbers in a fourth dimension. It was mathematical foolery, from one standpoint, but it lead to some fascinating if abstruse conclusions.

But his brain would not remain away from the subject of the telegram, even though a chicken appeared in the fenced-in lane ahead of him and went flapping wildly on before the car. It rose in midair, the car overtook it as it rose above the level of the hood, and there was a rolling, squawking bundle of shedding feathers tumbling over and over along the hood until it reached the slanting windshield. There it spun wildly upward, left a cloud of feathers fluttering about Tommy's head, and fell still squawking into the road behind. By the back-view mirror, Tommy could see it picking itself up and staggering dizzily back to the side of the road.

"My point was," said Tommy vexedly to himself, speaking of the article the telegram referred to, "that a man can only recognize three dimensions of space and one of time. So that if he got shot out of this cosmos altogether he wouldn't know the difference. He'd still seem to be in a three-dimensioned universe. And what is there in that stuff to get Denham in trouble?"

A house appeared ahead. A low, rambling sort of bungalow with a huge brick barn behind it. The house of Professor Denham, very certainly, and that barn was the laboratory in which he made his experiments.

Instinctively, Tommy stepped on the gas. The car leaped ahead. And then he was breaking frantically. A pipe-framed gate with thinner, unpainted wire mesh filling its surface loomed before him, much too late for him to stop. There was a minor shock, a crashing and squeaking, and then a crash and shattering of glass. Tommy bent low as the top bar of the gate hit his windshield. The double glass cracked and crumpled and bent, but did not fly to bits. And the car came to a halt with its wheels intricately entangled in torn-away fence wire. The gate had been torn from its hinges and was draped rakishly over the roadster. A tire went flat with a loud hissing noise, and Tommy Reames swore softly under his breath and got out to inspect the damage.

He was deciding that nothing irreparable was wrong when a man came bursting out

of the brick building behind the house. A tall, lean, youngish man who waved his arms emphatically and approached shouting, "You had no right to come in here! You must go away at once! You have damaged property! I will tell the Professor! You must pay for the damage! You must—"

"Damn!" said Tommy Reames. He had just seen that his radiator was punctured. A spout of ruddy, rusty water was pouring out on the grass.

The youngish man came up furiously. A pale young man, Tommy noticed. A young man with bristling, close-cropped hair and hornrimmed spectacles before weak-looking eyes. His mouth was very full and very red, in marked contrast to the pallor of his cheeks.

"Did you not see the sign upon the gate?" he demanded angrily, in curiously stilted English. "Did you not see that trespassers are forbidden? You must go away at once! You will be prosecuted! You will be imprisoned! You—"

Tommy said irritably, "Are you Von Holtz? My name is Reames. You telegraphed me."

The waving, lanky arms stopped in the middle of an excited gesture. The weak-looking eyes behind the lenses widened. A pink tongue licked the too-full, too-red lips.

"Reames? The Herr Reames?" Von Holtz stammered. Then he said suspiciously, "But you are not—you cannot be the Herr Reames of the article on dominant coordinates!"

"I don't know why not," said Tommy annoyedly. "I'm also the Herr Reames of several other articles, such as on the mechanics of continua and the mass and inertia of the tesseract. And I believe the current Philosophical Journal—"

He surveyed the spouting red stream from the radiator and shrugged ruefully.

"I wish you'd telephone the village to have somebody come out and fix my car," he said shortly, "and then tell me if this telegram is a joke or not."

He pulled out a yellow form and offered it. He had taken an instinctive dislike to the lean figure before him, but suppressed the feeling.

Von Holtz took the telegram and read it, and smoothed it out, and said agitatedly, "But I thought the Herr Reames would be—would be a venerable gentleman! I thought—"

"You sent that wire," said Tommy. "It puzzled me just enough to make me rush out here. And I feel like a fool for having done it. What's the matter? Is it a joke?"

Von Holtz shook his head violently, even as he bit his lips.

"No! No!" he protested. "The Herr Professor Denham is in the most terrible, most deadly danger! I—I have been very nearly mad, Herr Reames. The Ragged Men may seize him! . . . I telegraphed to you. I have not slept for four nights. I have worked! I have racked my brains! I have gone nearly insane, trying to rescue the Herr Professor! And I—"

Tommy stared. "Four days?" he said. "The thing, whatever it is, has been going on for four days?"

"Five," said Von Holtz nervously. "It was only today that I thought of you, Herr Reames. The Herr Professor Denham had praised your articles highly. He said that you were the only man who would be able to understand his work. Five days ago—"

Tommy grunted. "If he's been in danger for five days," he said skeptically, "he's not in such a bad fix or it'd have been over. Will you phone for a repairman? Then we'll see what it's all about."

The lean arms began to wave again as Von Holtz said desperately, "But Herr Reames, it is urgent! The Herr Professor is in deadly danger!"

"What's the matter with him?"

"He is marooned," said Von Holtz. Again he licked his lips. "He is marooned, Herr Reames, and you alone—"

"Marooned?" said Tommy more skeptically still. "In the middle of New York State? And I alone can help him? You sound more and more as if you were playing a rather elaborate and not very funny practical joke. I've driven sixty miles to get here. What is the joke, anyhow?"

Von Holtz said despairingly, "But it is true, Herr Reames! He is marooned. He has changed his coordinates. It was an experiment. He is marooned in the fifth dimension!"

There was dead silence. Tommy Reames stared blankly. Then his gorge rose. He had taken an instinctive dislike to this lean young man, anyhow. So he stared at him, and grew very angry, and would undoubtedly have gotten into his car and turned it about and driven it away again if it had been in any shape to run. But it wasn't. One tire was flat, and the last ruddy drops from the radiator were dripping slowly on the grass. So he pulled out a cigarette case and lighted a cigarette and said sardonically, "The fifth dimension? That seems rather extreme. Most of us get along very well with three dimensions. Four seems luxurious. Why pick on the fifth?"

Von Holtz grew pale with anger in his turn. He waved his arms, stopped, and said with stiff formality, "If the Herr Reames will follow me into the laboratory I will show him Professor Denham and convince him of the Herr Professor's extreme danger."

Tommy had a sudden-startling conviction that Von Holtz was in earnest. He might be mad, but he was in earnest. And there was undoubtedly a Professor Denham, and this was undoubtedly his home and laboratory.

"I'll look, anyway," said Tommy less skeptically. "But it is rather incredible, you know."

"It is impossible," said Von Holtz stiffly. "You are right, Herr Reames. It is quite impossible. But it is a fact."

He turned and stalked toward the big brick barn behind the house. Tommy went with him, wholly unbelieving and yet beginning to wonder if, just possibly, there was actually an emergency of a more normal and ghastly nature in being. Von Holtz might be a madman. He might.

Gruesome, grisly thoughts ran through Tommy's head. A madman dabbling in science might do incredible things, horrible things, and then demand assistance to undo an unimaginable murder.

Tommy was tense and alert as Von Holtz opened the door of the barnlike laboratory. He waved the lean young man on ahead.

"After you," he said curtly.

He felt almost a shiver as he entered. But the interior of the laboratory displayed no gruesome scene. It was a huge, high-ceilinged room with a concrete floor. A monster dynamo stood in one corner, coupled to a matter-of-fact four-cylinder crude-oil engine, to which was also coupled by a clutch an inexplicable windlass-drum with several hundred feet of chain wrapped around it. There were ammeters and voltmeters on a control panel, and one of the most delicate of dynamometers on its own stand, and there were work benches and a motor-driven lathe and very complete equipment for the working of metals. And there was an electric furnace, with splashes of solidified metal on the floor beside it, and there was a miniature casting-floor, and at the far end of the monster room was a gigantic solenoid which evidently had once swung upon gimbals and just as evidently was now broken, because it lay toppled askew upon its supports.

The only totally unidentifiable piece of apparatus in the place was one queer contrivance at one side. It looked partly like a machine gun because of a long brass barrel projecting from it. But the brass tube came out of a bulging casing of cast aluminum, and there was no opening through which shells could be fed.

Von Holtz moved to that contrivance, removed a cap from the end of the brass tube, looked carefully into the opening, and waved stiffly for Tommy to look in.

Again Tommy was suspicious, watching until Von Holtz was some distance away. But the instant he put his eye to the end of the brass tube he forgot all caution, all suspicion, all his doubts. He forgot everything in his amazement.

There was a lens in the end of the brass tube. It was, in fact, nothing more or less than a telescope, apparently looking at something in a closed box. But Tommy was not able to believe that he looked at an illuminated miniature for even the fraction of a second. He looked into the telescope, and he was seeing out-of-doors. Through

the aluminum casting that enclosed the end of the tube. Through the thick brick walls of the laboratory. He was gazing upon a landscape such as should not—such as could not—exist upon the earth.

There were monstrous, feathery tree-ferns waving languid fronds in a breeze that came from beyond them. The telescope seemed to be pointing at a gentle slope, and those tree-ferns cut off a farther view, but there was an impenetrable tangle of breast-high foliage between the instrument and that slope, and halfway up the incline there rested a huge steel globe.

Tommy's eyes fixed themselves upon the globe. It was man-made, of course. He could see where it had been bolted together. There were glassed-in windows in its sides, and there was a door.

As Tommy looked, that door opened partway, stopped as if someone within had hesitated, and then opened fully. A man came out. And Tommy said dazedly, "My God!"

Because the man was a perfectly commonplace sort of individual, dressed in a perfectly commonplace fashion, and he carried a perfectly commonplace briar pipe in his hand. Moreover, Tommy recognized him. He had seen pictures of him often enough, and he was Professor Edward Denham, entitled to put practically all the letters of the alphabet after his name, the author of "Polymerization of the Pseudo-Metallic Nitrides" and the proper owner of this building and its contents. But Tommy saw him against a background of tree-ferns such as should have been extinct upon this earth since the Carboniferous Period, some millions of years ago.

He was looking hungrily at his briar pipe. Presently he began to hunt carefully about on the ground. He picked together half a handful of brownish things which had to be dried leaves. He stuffed them into the pipe, struck a match, and lighted it. He puffed away gloomily, surrounded by wholly monstrous vegetation. A butterfly fluttered over the top of the steel globe. Its wings were fully a yard across. It flittered lightly to a plant and seemed to wait, and abruptly a vivid carmine blossom opened wide; wide enough to admit it.

Denham watched curiously enough, smoking the rank and plainly unsatisfying dried leaves. He turned his head and spoke over his shoulder. The door opened again. Again Tommy Reames was dazed.

Because a girl came out of the huge steel sphere—and she was a girl of the most modern and most normal sort. A trim sport frock, slim silken legs, bobbed hair. . .

Tommy did not see her face until she turned, smiling, to make some comment to Denham. Then he saw that she was breathtakingly pretty. He swore softly under his breath.

The butterfly backed clumsily out of the gigantic flower. It flew lightly away, its many-colored wings brilliant in the sunshine. And the huge crimson blossom closed slowly.

Denham watched the butterfly go away. His eyes returned to the girl, who was smiling at the flying thing, now out of the field of vision of the telescope. And there was utter discouragement visible in every line of Denham's figure. Tommy saw the girl suddenly reach out her hand and put it on Denham's shoulder. She patted it, speaking in an evident attempt to encourage him. She smiled, and talked coaxingly, and presently Denham made a queer, arrested gesture and went heavily back into the steel globe. She followed him, though she looked wearily all about before the door closed behind her, and when Denham could not see her face, her expression was tired and anxious indeed.

Tommy had forgotten Von Holtz, had forgotten the laboratory, had forgotten absolutely everything. If his original suspicions of Von Holtz had been justified, he could have been killed half a dozen times over. He was oblivious to everything but the sight before his eyes.

Now he felt a touch on his shoulder and drew his head away with a jerk. Von Holtz was looking down at him, very pale, with his weaklooking eyes anxious.

"They are still all right?" he demanded.

"Yes," said Tommy dazedly. "Surely. Who is that girl?"

"That is the Herr Professor's daughter, Evelyn," said Von Holtz uneasily. "I suggest,

Herr Reames, that you swing the dimensoscope about.”

“The—what?” asked Tommy, still dazed by what he had seen.

“The dimensoscope. This.” Von Holtz shifted the brass tube. The whole thing was mounted so that it could be swung in any direction. The mounting was exactly like that of a normal telescope. Tommy instantly put his eye to the eyepiece again.

He saw more tree-ferns, practically the duplicates of the background beyond the globe. Nothing moved save small, fugitive creatures among their fronds. He swung the telescope still farther. The

landscape swept by before his eyes. The tree-fern forest drew back. He saw the beginning of a vast and noisome morass, over which lay a thick haze as of a stream raised by the sun. He saw something move in that morass; something huge and horrible with a long and snakelike neck and the tiniest of heads at the end of it. But he could not see the thing clearly.

He swung the telescope yet again. And he looked over miles and miles of level, haze-blanketed marsh. Here and there were clumps of taller vegetation. Here and there were steaming, desolate pools. And three or four times he saw monstrous objects moving about clumsily in the marsh-land.

But then a glitter at the skyline caught his eye. He tilted the telescope to see more clearly, and suddenly he caught his breath. There, far away at the very horizon, was a city. It was tall and gleaming and very strange. No earthly city ever flung its towers so splendidly high and soaring. No city ever built by man gave off the fiery gleam of gold from all its walls and pinnacles. It looked like an artist’s dream, hammered out in precious metal, with its outlines softened by the haze of distance.

And something was moving in the air near the city. Staring, tense, again incredulous, Tommy Reames strained his eyes and saw that it was a machine. An aircraft; a flying machine of a type wholly unlike anything ever built on the planet Earth. It swept steadily and swiftly toward the city, dwindling as it went. It swooped downward toward one of the mighty spires of the city of golden gleams, and vanished.

It was with a sense of shock, of almost physical shock, that Tommy came back to realization of his surroundings to feel Von Holtz’s hand upon his shoulder and to hear the lean young man saying harshly, “Well, Herr Reames? Are you convinced that I did not lie to you? Are you convinced that the Herr Professor Denham is in need of help?”

Tommy blinked dazedly as he looked around the laboratory again. Brick walls, an oil-spattered crude-oil engine in one corner, a concrete floor and an electric furnace and a casting-box. .

“Why—yes . . .,” said Tommy dazedly. “Yes. Of course!” Clarity came to his brain with a jerk. He did not understand at all, but he believed what he had seen. Denham and his daughter were somewhere in some other dimension, yet within range of the extraordinary device he had looked through. And they were in trouble. So much was evident from their poses and their manner. “Of course,” he repeated. “They’re—there, wherever it is, and they can’t get back. They don’t seem to be in any imminent danger. . .

Von Holtz licked his lips. “The Ragged Men have not found them yet,” he said in a hushed, harsh voice. “Before they went into the globe we saw the Ragged Men. We watched them. If they do find the Herr Professor and his daughter, they will kill them very slowly, so that they will take days of screaming agony to die. It is that that I am afraid of, Herr Reames. The Ragged Men roam the tree-fern forests. If they find the Herr Professor, they will trace each nerve to its root of agony until he dies. And we will be able only to watch. . .

CHAPTER II

“The thing is,” said Tommy feverishly, “that we’ve got to find a way to get them back. Whether it duplicates Denham’s results or not. How far away are they?”

"A few hundred yards, perhaps," said Von Holtz wearily, "or ten million miles. It is the same thing. They are in a place where the fifth dimension is the dominant coordinate."

Tommy was pacing up and down the laboratory. He stopped and looked through the eyepiece of the extraordinary vision apparatus. He tore himself away from it again.

"How does this thing work?" he demanded.

Von Holtz began to unscrew two wing-nuts which kept the top of the aluminum casting in place.

"It is the first piece of apparatus which Professor Denham made," he said precisely. "I know the theory, but I cannot duplicate it. Every dimension is at right angles to all other dimensions, of course. The Herr Professor has a note, here—"

He stopped his unscrewing to run over a heap of papers on the work bench—papers over which he seemed to have been poring desperately at the time of Tommy's arrival. He handed a sheet to Tommy, who read:

"If a creature who was aware of only two dimensions made two right-angled objects and so placed them that all the angles formed by the combination were right angles, he would contrive a figure represented by the corner of a box; he would discover a third dimension. Similarly, if a three-dimensioned man took three right angles and placed them so that all the angles formed were right angles, he would discover a fourth dimension. This, however, would probably be the time dimension, and to travel in time would instantly be fatal. But with four right angles he could discover a fifth dimension, and with five right angles he could discover a sixth. . .

Tommy Reames put down the paper impatiently.

"Of course!" he said brusquely. "I know all that stuff. But up to the present time nobody has been able to put together even three right angles, in practice."

Von Holtz had returned to the unscrewing of the wing-nuts. He lifted off the cover of the dimensoscope.

"It is the thing the Herr Professor did not confide to me," he said bitterly. "The secret. The one secret! Look in here."

Tommy looked. The objective-glass at the end of the telescope faced a mirror, which was inclined to its face at an angle of forty-five degrees. A beam of light from the objective would be reflected to a second mirror, twisted in a fashion curiously askew. Then the light would go to a third mirror. .

Tommy looked at that third mirror, and instantly his eyes ached. He closed them and opened them again. Again they stung horribly. It was exactly the sort of eyestrain which comes of looking through a lens which does not focus exactly, or through a strange pair of eyeglasses. He could see the third mirror, but his eyes hurt the instant they looked upon it, as if that third mirror were distorted in an impossible fashion. He was forced to draw them away. He could see, though, that somehow that third mirror would reflect his imaginary beam of light into a fourth mirror of which he could see only the edge. He moved his head—and still saw only the edge of a mirror. He was sure of what he saw, because he could look into the wavy, bluish translucency all glass shows upon its edge. He could even see the thin layer of silver backing. But he could not put himself into a position in which more than the edge of that mirror was visible.

"Good Lord!" said Tommy Reames feverishly. "That mirror—"

"A mirror at forty-five degrees," said Von Holtz precisely. "reflects light at a right angle. There are four mirrors, and each bends a ray of light through a right angle which is also a right angle to all the others. The result is that the dimensoscope looks into what is a fifth dimension, into which no man ever looked before. But I cannot move other mirrors into the positions they have in this instrument.] do not know how."

Tommy shook his head impatiently, staring at the so-simple, yet

— — incredible device whose theory had been mathematically proven numberless times, but never put into practice before.

"Having made this device," said Von Holtz, "the Herr Professor constructed what he

termed a catapult. It was a coil of wire, like the large machine there. It jerked a steel ball first vertically, then horizontally, then laterally, then in a fourth-dimensional direction, and finally projected it violently off in a fifth-dimensional path. He made small hollow steel balls and sent a butterfly, a small sparrow, and finally a cat into that other world. The steel balls opened of themselves and freed those creatures. They seemed to suffer no distress. Therefore he concluded that it would be safe for him to go, himself. His daughter refused to permit him to go alone, and he was so sure of his safety that he allowed her to enter the globe with him. She did. I worked the catapult which flung the globe in the fifth dimension, but his device for returning failed to operate. Hence he is marooned."

"But the big catapult—"

"Can you not see that the big catapult is broltun?" demanded Von Holtz bitterly. "A special metal is required for the missing parts. That, I know how to make. Yes. I can supply that. But I cannot shape it! I cannot design the gears which will move it as it should be moved! I cannot make another dimensoscope. I cannot, Herr Reames, calculate any method of causing four right angles to be all at right angles to one another. It is my impossibility! It is for that that I have appealed to you. You see it has been done. I see that it is done. I can make the metal which alone can be moved in the necessary direction. But I cannot calculate any method of moving it in that direction! If you can do so, Herr Reames, we can perhaps save the Herr Professor Denham. If you cannot—Gott! The death he will die is horrible to think of!"

"And his daughter," said Tommy grimly. "His daughter, also."

He paced up and down the laboratory again. Von Holtz moved to the work bench from which he had taken Denham's note. There was a pile of such memoranda, thumbed over and over. And there were papers in the angular, precise handwriting which was Von Holtz's own, and calculations and speculations and the remains of frantic efforts to work out, somehow, the secret which as one manifestation had placed one mirror so that it hurt the eyes to look at it, and one other mirror so that from every angle of a normal existence, one could see only the edge.

"I have worked, Herr Reames," said Von Holtz drearily. "Gott! How I have worked! But the Herr Professor kept some things secret, and that so-essential thing is one of them."

Presently he said tiredly, "The dimension-traveling globe was built in this laboratory. It rested here." He pointed. "The Herr Professor was laughing and excited at the moment of departure. His daughter smiled at me through the window of the globe. There was an undercarriage with wheels upon it. You cannot see those wheels through the dimensoscope. They got into the globe and closed the door. The Herr Professor nodded to me through the glass window. The dynamo was running at its fullest speed. The laboratory smelled of hot oil, and of ozone from the sparks. I lifted my hand, and the Herr Professor nodded again, and I threw the switch. This switch, Herr Reames! It sparked as I closed it, and the flash partly blinded me. But I saw the globe rush toward the giant catapult yonder. It leaped upward into the huge coil, which whirled madly. Dazed, I saw the globe hanging suspended in midair, two feet from the floor. It shook! Once! Twice! With violence! Suddenly its outline became hazy and distorted. My eyes ached with looking at it. And then it was gone!"

Von Holtz's arms waved melodramatically. "I rushed to the dimensoscope and gazed through it into the fifth dimension. I saw the globe floating onward through the air, toward that bank of glossy ferns. I saw it settle and turn over, and then slowly right itself as it came to rest. The Herr Professor got out of it. I saw him, through the instrument which could look into the dimension into which he had gone. He waved his hand to me. His daughter joined him, surveying the strange cosmos in which they were. The Herr Professor plucked some of the glossy ferns, took photographs, then got back into the globe.

"I awaited its return to our own world. I saw it rock slightly as he worked upon the apparatus within. I knew that when it vanished from the dimensoscope it would have returned to our own universe. But it remained as before. It did not move. After three hours of

anguished waiting, the Herr Professor came out and made signals to me of despair. By gestures, because no sound could come through the dimensoscope itself, he begged me to assist him. And I was helpless! Made helpless by the Herr Professor's own secrecy! For four days and nights I have toiled, hoping desperately to discover what the Herr Professor had hidden from me. At last I thought of you. I telegraphed to you. If you can assist me. .

"I'm going to try it, of course," said Tommy shortly.

He paced back and forth. He stopped and looked through the brass-tubed telescope. Giant tree-ferns, unbelievable but real. The steel globe resting partly overturned upon a bank of glossy ferns. Breast-high, incredible foliage between the point of vision and that extraordinary vehicle.

While Tommy had been talking and listening, while he had been away from the eyepiece, one or other of the occupants of the globe had emerged from it. The door was open. But now the girl came bounding suddenly through the ferns. She called, though it seemed to Tommy that there was a curious air of caution even in her calling. She was excited, hopefully excited.

Denham came out of the globe with a clumsy club in his hand. But Evelyn caught his arm and pointed up into the sky. Denham stared, and then began to make wild and desperate gestures as if trying to attract attention to himself.

Tommy watched for minutes, and then~swung the dimensoscope around. It was extraordinary, to be sitting in the perfectly normal brick-walled laboratory, looking into a slender brass tube, and seeing another universe entirely, another wild and unbelievable landscape.

The tree-fern forest drew back, and the vast and steaming morass was again in view. There were distant bright golden gleams from the city. But Tommy was searching the sky, looking in the sky of a world in the fifth dimension for a thing which would make a man gesticulate hopefully.

He found it. It was an aircraft, startlingly close through the telescope. A single figure was seated at its controls, motionless as if bored, with exactly the air of a weary truck driver piloting a vehicle along a roadway he does not really see. And Tommy, being near enough to see the pilot's pose, could see the aircraft clearly. It was totally unlike a terrestrial airplane. A single huge and thick wing supported it. But the wing was angular and clumsy-seeming, and its form was devoid of the grace of an earthly aircraft wing, and there was no tail whatever to give it the appearance of a living thing. There was merely a long, rectangular wing with a framework beneath it, and a shimmering thing which was certainly not a screw propeller, but which seemed to draw it.

It moved on steadily and swiftly, dwindling in the distance, with its motionless pilot seated before a mass of corded bundles. It looked as if this were a freight plane of some sort, and therefore made in a strictly utilitarian fashion.

It vanished in the haze above the monster swamp, going in a straight line for the Golden City at the world's edge.

Tommy stared at it, long after it had ceased to be visible. Then he saw a queer movement on the earth near the edge of the morass. Figures were moving. Human figures. He saw four of them, shaking clenched fists and capering insanely, seeming to bellow insults after the oblivious and now invisible flying thing. He could see that they were nearly naked, and that one of them carried a spear. But the indubitable glint of metal was reflected from one of them for an instant, when some metal accouterment about him glittered in the sunlight.

They moved from sight behind thick, feathery foliage, and Tommy swung back the brass tube to see the globe again. Denham and his daughter were staring in the direction in which Tommy had seen those human figures. Denham clutched his clumsy club grimly. His face was drawn and his figure tensed. And suddenly Evelyn spoke quietly, and the two of them dived into the fern forest and disappeared. Minutes later they returned, dragging masses of tree-fern fronds with which they masked the globe from view. They worked

hastily, desperately, concealing the steel vehicle from sight. And then Denham stared tensely all about, shading his eyes with his hand. He and the girl withdrew cautiously into the forest.

It was minutes later that Tommy was roused by Von Holtz's hand on his shoulder.

"What has happened, Herr Reames?" he asked uneasily. "The— Ragged Men?"

"I saw men," said Tommy briefly, "shaking clenched fists at an aircraft flying overhead. And Denham and his daughter have hidden the globe behind a screen of foliage."

Von Holtz licked his lips fascinatedly.

"The Ragged Men," he said in a hushed voice. "The Herr Professor called them that because they cannot be of the people who live in the Golden City. They hate the people of the Golden City. I think that they are bandits; renegades, perhaps. They live in the tree-fern forests and scream curses at the airships which fly overhead. And they are afraid of those airships."

"How long did Denham use this thing to look through, before he built his globe?"

Von Holtz considered. "Immediately it worked," he said at last, "he began work on a small catapult. It took him one week to devise exactly how to make that. He experimented with it for some days and began to make the large globe. That took nearly two months—the globe and the large catapult together. And also the dimensoscope was at hand. His daughter looked through it more .than he did, or myself."

"He should have known what he was up against," said Tommy, frowning. "He ought to have taken guns, at least. Is he armed?"

Von Holtz shook his head. "He expected to return at once," he said desperately. "Do you see, Herr Reames, the position it puts me in? I may be suspected of murder! I am the Herr Professor's assistant. He disappears. Will I not be accused of having put him out of the way?"

"No," said Tommy thoughtfully. "You won't." He glanced through the brass tube and paced up and down the room. "You telephone for someone to repair my car," he said suddenly and abruptly. "I am going to stay here and wo~rk this thing out. I've got just the glimmering of an idea. But I'll need my car in running order, in case we have to go out and get materials in a hurry."

Von Holtz bowed stiffly and went out of the laboratory. Tommy looked after him, even moved to make sure he was gone. And then Tommy Reames went quickly to the work bench on which were the littered notes and calculations Von Holtz had been using, and which were now at his disposal. But Tommy did not leaf through them. He reached under the blotter beneath the whole pile. He had seen Von Holtz furtively push something out of sight, and he had disliked and distrusted Von Holtz from the beginning. Moreover, it was pretty thoroughly clear that Denham had not trusted him too much. A trusted assistant should be able to understand, at least, any experiment performed in a laboratory.

A folded sheet of paper came out. Tommy glanced at it:

You messed things up right! Denham marooned and you got nothing. No plans or figures either. When you get them, you get your money. If you don't you are out of luck. If this Reames guy can't fix up what you want it'll be just too bad for you.

There was no salutation nor any signature beyond a scrawled and sprawling "J."

Tommy Reames's jaw set grimly. He folded the scrap of paper and thrust it back out of sight again.

"Pretty!" he said harshly. "So a gentleman named 'J' is going to pay Von Holtz for plans or calculations it is hoped I'll provide! Which suggests—many things! But at least I'll have Von Holtz's help until he thinks my plans or calculations are complete. So that's all right. . . ."

Tommy could not be expected, of course, to guess that the note he had read was

quite astounding proof of the interest taken in nonEuclidean geometry by a vice king of Chicago, or that the ranking beer baron of that metropolis was the man who was so absorbed in abstruse theoretic physics.

Tommy moved toward the great solenoid which lay askew upon its wrecked support. It had drawn the steel globe toward it, had made that globe vibrate madly, twice, and then go hazy and vanish. It had jerked the globe in each of five directions, each at right angles to all the others, and had released it when started in the fifth dimension. The huge coil was quite nine feet across and would take the steel globe easily. It was pivoted in concentric rings which made up a set of gimbals far more elaborate than were ever used to suspend a mariner's compass aboard ship.

There were three rings, one inside the other. And two rings wif take care of any motion in three dimensions. These rings were pivoted, too, so that an unbelievably intricate series of motions could be given to the solenoid within them all. But the device was broken, now. A pivot had given away, and shaft and socket alike had vanished. Tommy became absorbed. Some oddity bothered him.

He pieced the thing together mentally. And he exclaimed suddenly. There had been four rings of metal! One was gone! He comprehended, very suddenly. The third mirror in the dimensoscope was the one so strangely distorted by its position, which was at half of a right angle to all the dimensions of human experience. It was the third ring in the solenoid's supports which had vanished. And Tommy, staring at the gigantic apparatus and summoning all his theoretic knowledge and all his brain to work, saw the connection between the two things.

"The time dimension and the world-line," he said sharply, excited in spite of himself. "Revolving in the time dimension means telescoping in the world-line. . . . It would be a strain no matter could endure. . . ."

The mirror in the dimensoscope was not pointing in a fourth dimension. It did not need to. It was reflecting light at a right angle, and hence needed to be only at half of a right angle to the two

courses of the beam it reflected. But to whirl the steel globe into a fifth dimension, the solenoid's support had for one instant to revolve in time! For the fraction of a second it would have literally to pass through its own substance. It would be required to undergo precisely the sort of strain involved in turning a hollow seamless metal globe inside out! No metal could stand such a strain. No form of matter known to man could endure it.

"It would explode!" said Tommy excitedly to himself, alone in the great bare laboratory. "Steel itself would vaporize! It would wreck the place!"

And then he looked blank. Because the place had very obviously not been wrecked. And yet a metal ring had vanished, leaving no trace. .

Von Holtz came back. He looked frightened.

"A—a repairman, Herr Reames," he said, stammering, "is on the way. And—Herr Reames. . . ."

Tommy barely heard him, For a moment, Tommy was all scientist, confronted with the inexplicable, yet groping with a blind certainty toward a conclusion he very vaguely foresaw. He waved his hand impatiently. .

"The Herr Jacaro is on the way here," stammered Von Holtz.

Tommy blinked, remembering that Von Holtz had told him he could make a certain metal, the only metal which could be moved in the fourth dimension.

"Jacaro?" he said blankly.

"The—friend of the Herr Professor Denham. He advanced the money for the Herr Professor's experiments."

Tommy heard him with only half his brain, though that half instantly decided that Von Holtz was lying. The only Jacaro Tommy knew of was a prominent gangster from Chicago, who had recently cemented his position in Chicago's underworld by engineering the amalgamation of two once-rival gangs. Tommy knew, in a vague fashion, that Von Holtz was

frightened, that he was terrified in some way. And that he was inordinately suspicious of someone, and filled with a queer desperation.

"Well?" said Tommy abstractedly. The thought he needed was coming. A metal which would have full tensile strength up to a certain instant, and then disrupt itself without violence into a gas, a vapor. . . It would be an alloy, perhaps. It would be. .

He struck at his own head with his clenched fist, angrily demanding that his brain bring forth the thought that was forming slowly. The metal that could be revolved in time without producing a disastrous explosion and without requiring an impossible amount of power.

He did not see Von Holtz looking in the eyepiece of the dimensoscope. He stared at nothing, thinking concentratedly, putting every bit of energy into sheer thought. And suddenly, like the explosion he sought a way to avoid, the answer came, blindingly clear.

He surveyed that answer warily. A tremendous excitement filled him.

"I've got it!" he said softly to himself. "By God, I know how he did the thing!"

And as if through a mist the figure of Von Holtz became clear before his eyes. Von Holtz was looking into the dimensoscope tube. He was staring into that other, extraordinary world in which Denham and his daughter were marooned. And Von Holtz's face was utterly, deathly white, and he was making frantic, repressed gestures, and whispering little whimpering phrases to himself. They were unintelligible, but the deathly pallor of his cheeks, and the fascinated, dribbling fullness of his lips brought Tommy Reames suddenly down to earth.

"What's happening?" demanded Tommy sharply.

Von Holtz did not answer. He made disjointed, moaning little exclamations to himself. He was twitching horribly as he looked through the telescope into that other world. .

Tommy flung him aside and clapped his own eye to the eyepiece. And then he groaned.

The telescope was pointed at the steel globe upon that ferny bank, no more than a few hundred yards away but two dimensions removed from Earth. The screening mass of tree fronds had been torn away. A swarm of ragged, half-naked men was gathered about the globe. They were armed with spears and clubs, in the main, but there were other weapons of intricate design whose uses Tommy could not even guess at. He did not try. He was watching the men as they swarmed about and over the steel sphere. Their faces were brutal and savage, and now they were distorted with an insane hate. It was the same awful, gibbering hatred he had sensed in the caperings of the four he had seen bellowing vituperation at an airplane.

They were not savages. Somehow he could not envision them as primitive. Their features were hard-bitten, seamed with hatred and with vice unspeakable. And they were white. The instant impression any man would have received was that here were broken men; fugitives, bandits, assassins. Here were renegades or worse from some higher, civilized race.

They battered hysterically upon the steel globe. It was not the attack of savages upon a strange thing. It was the assault of desperate, broken men upon a thing they hated. A glass pane splintered and crashed. Spears were thrust into the opening, while mouths opened as if in screams of insane fury. And then, suddenly, the door of the globe flew wide.

The Ragged Men did not wait for anyone to come out. They fought each other to get into the opening, their eyes glaring madly, filled with the lust to kill.

CHAPTER III

A battered and antiquated flivver came chugging down the wirefenced lane to the laboratory, an hour later. It made a prodigious din, and Tommy Reames went out to meet it. He was still a little pale. He had watched the steel globe turned practically inside out by the

Ragged Men. He had seen them bringing out cameras, cushions, and even the padding of the walls, to be torn to bits in a truly maniacal fury. But he had not seen one sign of a human being killed. Denham and his daughter had not been in the globe when it was found and ransacked. So far, then, they were probably safe. Tommy had seen them vanish into the tree-fern forest. They had been afraid, and with good reason. What dangers they might encounter in the fern forest he could not guess. How long they would escape the search of the Ragged Men, he could not know. How he could ever hope to find them if he succeeded in duplicating Denham's dimension-traveling apparatus he could not even think of, just now. But the Ragged Men were not searching the fern forest. So much was sure. They were encamped by the steel sphere, and a scurvy-looking lot they were.

Coming out of the brick laboratory, Tommy saw a brawny figure getting out of the antiquated flivver whose arrival had been so thunderous. That brawny figure nodded to him and grinned. Tommy recognized him. The red-headed, broad-shouldered filling-station attendant in the last village, who had given him specific directions for reaching this place.

"You hit that gate a lick, didn't you?" asked the erstwhile filling-station attendant amiably. "Mr. Von Holtz said you had a flat and a busted radiator. That right?"

Tommy nodded. The red-headed man walked around the car, scratched his chin, and drew out certain assorted tools. He put them on the grass with great precision, pumped a gasoline blow-torch to pressure, and touched a match to its priming-basin, and while the gasoline flamed smokily he made a half-dozen casual movements with a file, and the broken radiator tube was exposed for repair.

He went back to the torch and observed placidly, "The Professor ain't around, is he?"

Tommy shook his head.

"Thought not," said the red-headed one. "He gen'rally comes out and talks awhile. I helped him build some of them dinkuses in the barn yonder."

Tommy said eagerly, "Say, which of those things did you help him build? That big thing with the solenoid—the coil?"

"Yeah. How'd it work?" The red-headed one set a soldering iron in place and began to jack up the rear wheel to get at the tire. "Crazy idea, if you ask me. I told Miss Evelyn so. She laughed and said she'd be in the ball when it was tried. Did it work?"

"Too damn well," said Tommy briefly. "I've got to repair that solenoid. How about a job helping?"

The red-headed man unfastened the lugs of the rim, kicked the tire speculatively, and said, "Gone to hell." He put on the spare tire with ease and dispatch.

"Um," he said. "How about that Mr. Von Holtz? Is he goin' to boss the job?"

"He is not," said Tommy, with a shade of grimness in his tone.

The red-headed man nodded and took the soldering iron in hand. He unwound a strip of wire solder, mended the radiator tube with placid ease, and seemed to bang the cooling-flanges with a total lack of care. They went magically back into place, and it took close inspection to see that the radiator had been damaged.

"She's all right," he observed. He regarded Tommy impersonally. "Suppose you tell me how come you horn in on this," he suggested, "an' maybe I'll play. That guy Von Holtz is a crook, if you ask me about him."

Tommy ran his hand across his forehead, and told him.

"Urn," said the red-headed man calmly. "I think I'll go break Mr. Von Holtz's neck. I got me a hunch."

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He took two deliberate steps forward. But Tommy said, "I saw Denham not an hour ago. So far, he's all right. How long he'll be all right is a question. But I'm going after him."

The red-headed man scrutinized him exhaustively.

"Urn. I might try that myself. I kinda like the Professor. An' Miss Evelyn. My name's Smithers. Let's go look through the dinkus the Professor made."

They went together into the laboratory. Von Holtz was looking through the dimensoscope. He started back as they entered, and looked acutely uneasy when he saw the red-headed man.

"How do you do," he said nervously. "They—the Ragged Men— have just brought in a dead man. But it is not the Herr Professor."

Without a word, Tommy took the brass tube in his hand. Von Holtz moved away, biting his lips. Tommy stared into that strange other world.

The steel sphere lay as before, slightly askew upon a bank of glossy ferns. But its glass windows were shattered, and fragments of everything it had contained were scattered about. The Ragged Men had made a camp and built a fire. Some of them were roasting meat—the huge limb of a monstrous animal with a scaly, reptilian hide. Others were engaged in vehement argument over the body of one of their number, lying sprawled out upon the ground.

Tommy spoke without moving his eyes from the eyepiece. "I saw Denham with a club just now. This man was killed by a club."

The Ragged Men in the other world debated acrimoniously. One of them pointed to the dead man's belt, and spread out his hands. Something was missing from the body. Tommy saw, now, three or four other men with objects that looked rather like policemen's truncheons, save that they were made of glittering metal. They were plainly weapons. Denham, then, was armed—if he could understand how the weapon was used.

The Ragged Men debated, and presently their dispute attracted the attention of a man with a huge black beard. He rose from where he sat gnawing at a piece of meat and moved grandly toward the disputatious group. They parted at his approach, but a single member continued the debate against even the bearded giant. The bearded one plucked the glittering truncheon from his belt. The disputatious one gasped in fear and flung himself desperately forward. But the bearded man kept the truncheon pointed steadily. . . . The man who assailed him staggered, reached close enough to strike a single blow, and collapsed. The bearded man pointed the metal truncheon at him as he lay upon the ground. He heaved convulsively, and was still.

The bearded man went back to his seat and picked up the gnawed bit of meat again. The dispute had ceased. The chattering group of men dispersed.

Tommy was about to leave the eyepiece of the instrument when a movement nearby caught his eye. A head peered cautiously toward the encampment. A second rose beside it. Denham and his daughter Evelyn. They were apparently no more than thirty feet from the dimensoscope. Tommy could see them talking cautiously, saw Denham lift and examine a metal truncheon like the bearded man's, and force his daughter to accept it. He clutched a club, himself, with a grim satisfaction.

Moments later they vanished quietly in the thick fern foliage, and though Tommy swung the dimensoscope around in every direction, he could see nothing of their retreat.

He rose from that instrument with something approaching hopefulness. He'd seen Evelyn very near and very closely. She did not look happy, but she did look alert rather than worn. And Denham was displaying a form of competence in the face of danger which was really more than would have been expected in a Ph.D., an M.A., and other academic distinctions running to most of the letters of the alphabet.

"I've just seen Denham and Evelyn again," said Tommy crisply. "They're safe so far. And I've seen one of the weapons of the Ragged Men in use. If we can get a couple of automatics and some cartridges to Denham, he'll be safe until we can repair the big solenoid."

"There was the small catapult," said Von Holtz bitterly, "but it was dismantled. The Herr Professor saw me examining it, and he dismantled it. So that I did not learn how to calculate the way of changing the position—"

Tommy's eyes rested queerly on Von Holtz for a moment. "You know how to make the metal required," he said suddenly. "You'd better get busy making it. Plenty of it. We'll need it."

Von Holtz stared at him, his weak eyes almost frightened. "You know? You know how to combine the right angles?"

"I think so," said Tommy. "I've got to find out if I'm right. Will you make the metal?"

Von Holtz bit at his too-red lips. "But Herr Reames!" he said stridently, "I wish to know the equation! Tell me the method of pointing a body in a fourth or a fifth direction. it is only fair—"

"Denham didn't tell you," said Tommy.

Von Holtz's arms jerked wildly.

"But I will not make the metal! I insist upon being told the equation! I insist upon it! I will not make the metal if you do not tell me!"

Smithers was in the laboratory, of course. He had been surveying the big solenoid-catapult and scratching his chin reflectively. Now he turned.

But Tommy took Von Holtz by the shoulders. And Tommy's hands were the firm and sinewy hands of a sportsman, if his brain did happen to be the brain of a scientist. Von Holtz writhed in his grip.

"There is only one substance which could be the metal I need, Von Holtz," he said gently. "Only one substance is nearly threedimensional. Metallic ammonium! It's known to exist, because it makes a mercury amalgam, but nobody has been able to isolate it because nobody has been able to give it a fourth dimension—duration in time. Denham did it. You can do it. And I need it, and you'd better set to work at the job. You'll be very sorry if you don't, Von Holtz!"

Smithers said with a vast calmness, "I got me a hunch. So if y'want his neck broke . .

Tommy released Von Holtz, and the lean young man gasped and sputtered and gesticulated wildly in a frenzy of rage.

"He'll make it," said Tommy coldly. "Because he doesn't dare not to!"

Von Holtz went out of the laboratory, his weak-looking eyes staring and wild, and his mouth working.

"He'll be back," said Tommy briefly. "You've got to make a small model of that big catapult, Smithers. Can you do it?"

"Sure," said Smithers. "The ring'll be copper tubing, with pinbearings. Wind a coil on the lathe. It'll be kinda rough, but it'll do. But gears, now . .

"I'll attend to them. You know how to work that metallic ammonium?"

"If that's what it was," agreed Smithers. "I worked it for the Professor."

Tommy leaned close and whispered, "You never made any gears of that. But did you make some springs?"

"Uh-huh!"

Tommy grinned joyously.

"Then we're set and I'm right! Von Holtz wants a mathematical formula, and no one on earth could write one, but we don't need it!"

Smithers rummaged around the laboratory with a casual air, acquired this and that and the other thing, and set to work with an astounding absence of waste motions. From time to time he inspected the great catapult thoughtfully, verified some impression, and went about the construction of another part.

And when Von Holtz did not return, Tommy hunted for him. He suddenly remembered hearing his car motor start. He found his car missing. He swore, then, and grimly began to hunt for a telephone in the house. But before he had raised central he heard the deep-toned purring of the motor again. His car was coming swiftly back to the house. And he saw, through a window, that Von Holtz was driving it.

The lean young man got out of it, his face white with passion. He started for the

laboratory. Tommy intercepted him.

"I—went to get materials for making the metal," said Von Holtz hoarsely, repressing his rage with a great effort. "I shall begin at once, Herr Reames."

Tommy said nothing whatever. Von Holtz was lying. Of course. He carried nothing in the way of materials. But he had gone away from the house, and Tommy knew as definitely as if Von Holtz had told him, that Von Holtz had gone off to communicate in safety with someone who signed his correspondence with a J.

Von Holtz went into the laboratory. The four-cylinder motor began to throb at once. The whine of the dynamo arose almost immediately after. Von Holtz came out of the laboratory and dived into a shed that adjoined the brick building. He remained in there.

Tommy looked at the trip register on his speedometer. Like most people with methodical minds, he had noted the reading on arriving at a new destination. Now he knew how far Von Holtz had gone. He had been to the village and back.

"Meaning," said Tommy grimly to himself, "that the J who wants plans and calculations is either in the village or at the end of a longdistance wire. And Von Holtz said he was on the way. He'll probably turn up and try to bribe me."

He went back into the laboratory and put his eye to the eyepiece of the dimensoscope. Smithers had his blowtorch going and was busily accumulating an apparently unrelated series of discordant bits of queerly shaped metal. Tommy looked through at the strange, mad world he could see through the eyepiece.

The tree-fern forest was still. The encampment of the Ragged Men was nearly quiet. Sunset seemed to be approaching in this other world, though it was still bright outside the laboratory. The hours of day and night were obviously not the same in the two worlds, so close together that a man could be flung from one to the other by a mechanical contrivance.

The sun seemed larger, too, than the orb which lights our normal earth. When Tommy swung the vision instrument about to search for it, he found a great red ball quite four times the diameter of our own sun, neatly bisected by the horizon. Tommy watched, waiting for it to sink. But it did not sink straight downward as the sun seems to do in all temperate latitudes. It descended, yes, but it moved along the horizon as it sank. Instead of a direct and forthright dip downward, the sun seemed to progress along the horizon, dipping more deeply as it swam. And Tommy watched it blankly.

"It's not our sun. . . . But it's not our world. Yet it revolves, and there are men on it. And a sun that size would bake the earth. . . . And it's sinking at an angle that would only come at a latitude of—"

That was the clue. He understood at once. The instrument through which he regarded the strange world looked out upon the polar regions of that world. Here, where the sun descended slantwise, were the high latitudes, the coldest spaces upon all the whole planet. And if here there were the gigantic growths of a carboniferous era, the tropic regions of this planet must be literal infernos.

And then he saw that in its gradual descent the monster sun was going along behind the Golden City, and the outlines of its buildings, the magnificence of its spires, were limned clearly for him against the dully glowing disk.

Nowhere upon earth had such a city ever been dreamed of. No man had ever envisioned such a place, where far-flung arches interconnected soaring, towering columns, where curves of perfect grace were united in forms of utterly perfect proportion. .

The sunlight died, and dusk began and deepened, and vividly brilliant stars began to come out overhead, and Tommy suddenly searched the heavens eagerly for familiar constellations. And found not one. All the stars were strange. These stars seemed larger and much more near than the tiny pinpoints that blink down upon our earth.

And then he swung the instrument again and saw great fires roaring and the Ragged Men crouched about them. Within them, rather, because they had built fires about themselves as if to make a wall of flame. And once Tommy saw twin, monstrous eyes gazing from the blackness of the tree-fern forest. They

were huge eyes, and they were far apart, so that the head of the creature who used them must have been enormous. And they were all of fifteen feet above the ground when they speculatively looked over the ring of fires and the ragged, degraded men within them. Then that creature, whatever it was, turned away and vanished.

But Tommy felt a curious shivering horror of the thing. It had moved soundlessly, without a doubt, because not one of the Ragged Men had noted its presence. It had been kept away by the fires. But Denham and Evelyn were somewhere in the tree-fern forest, and they would not dare to make fires. .

Tommy drew away from the dimensoscope, shivering. He had been looking only, but the place into which he looked was real, and the dangers that lay hidden there were very genuine, and there was a man and a girl of his own race and time struggling desperately, without arms or hope, to survive.

Smithers was casually fitting together an intricate array of little rings made of copper tubing. There were three of them, and each was fitted into the next largest by pins which enabled them to spin noiselessly and swiftly at the touch of Smithers's finger. He had them spinning now, each in a separate direction, and the effect was bewildering.

As Tommy watched, Smithers stopped them, oiled the pins carefully, and painstakingly inserted a fourth ring. Only this ring was of a white metal that looked somehow more pallid than silver. It had a whiteness like that of ivory beneath its metallic gleam.

Tommy blinked. "Did Von Holtz give you that metal?" he asked suddenly.

Smithers looked up and puffed at a short brown pipe. "Nope. There was some splashes of it by the castin' box. I melted 'em together an' run a ring. Pressed it to shape; y' can't hammer this stuff. It goes to water and dries up quicker'n lightning—an' you hold y'nose an' run. I used it before for the Professor."

Tommy went over to him excitedly. He picked up the little contrivance of many concentric rings. The big motor was throbbing rhythmically, and the generator was humming at the back of the laboratory. Von Holtz was out of sight.

With painstaking care Tommy went over the little device. He looked up.

"A coil?"

"I wound one," said Smithers calmly. "On the lathe. Not so hot, but it'll do, I guess. But I can't fix these rings like the Professor did."

"I think I can," said Tommy crisply. "Did you make some wire for springs?"

"Yeah!"

Tommy fingered the wire. Stout, stiff, and surprisingly springy wire of the same peculiar metal. It was that metallic ammonium which chemists have deduced must exist because of the chemical behavior of the compound NH but which Denham alone had managed to procure. Tommy deduced that it was an allotropic modification of the substance which forms an amalgam with mercury, as metallic tin is an allotrope of the amorphous gray powder which is tin in its normal, stable state.

He set to work with feverish excitement. For one hour, for two, he worked. At the end of that time he was explaining the matter curtly to Smithers, so intent on his work that he wholly failed to hear a motor car outside or to realize that it had also grown dark in this world of ours.

"You see, Smithers, if a two-dimensioned creature wanted to adjust two right angles at right angles to each other, he'd have them laid flat, of course. And if he put a spring at the far ends of those right angles—they'd look like a T, put together—so that the cross-bar of that T was under tension, he'd have the equivalent of what I'm doing. To make a three-dimensioned figure, that imaginary man would have to bend one side of the cross-bar

up. As if the two ends of it were under tension by a spring, and the spring would only be relieved of tension when that cross-bar was bent. But the vertical would be his time dimension, so he'd have to have something thin, or it couldn't be bent. He'd need something 'thin in time.'

"We have the same problem. But metallic ammonium is 'thin in time.' It's so fugitive a substance that Denham is the only man ever to secure it. So we use these rings and adjust these springs to them so they're under tension which will only be released when they're all at right angles to each other. In our three dimensions that's impossible, but we have a metal that can revolve in a fourth, and we reinforce their tendency to adjust themselves by starting them off with a jerk.

We've got 'em flat. They'll make a good stiff jerk when they try to adjust themselves. And the solenoid's a bit eccentric—"

"Shut up!" snapped Smithers suddenly.

He was facing the door, bristling. Von Holtz was in the act of coming in, with a beefy, broad-shouldered man with blue jowls. Tommy straightened up, thought swiftly, and then smiled grimly.

"Hullo, Von Holtz," he said pleasantly. "We've just completed a model catapult. We're all set to try it out. Watch!"

He set a little tin can beneath the peculiar device of copper-tubing rings. The can was wholly ordinary, made of thin sheet-iron plated with tin as are all the tin cans of commerce.

"You have the catapult remade?" gasped Von Holtz. "Wait! Wait! Let me look at it!"

For one instant, and one instant only, Tommy let him see. The massed set of concentric rings, each one of them parallel to all the others. It looked rather like a flat coil of tubing; certainly like no particularly obscure form of projector. But as Von Holtz's weak eyes fastened avidly upon it, Tommy pressed the improvised electric switch. At once that would energize the solenoid and release all the tensed springs from their greater tension, for an attempt to reach a permanent equilibrium.

As Von Holtz and the blue-jowled man stared, the little tin can leaped upward into the tiny coil. The small copper rings twinkled one within the other as the springs operated. The tin can was wrenched this way and that, then for the fraction of a second hurt the eyes that gazed upon it—and it was gone! And then the little coil came spinning down to the work bench top from its broken bearings and the remaining copper rings spun aimlessly for a moment. But the third ring of whitish metal had vanished utterly, and so had the coiled-wire springs which Von Holtz had been unable to distinguish. And there was an overpowering smell of ammonia in the room.

Von Holtz flung himself upon the still-moving little instrument. He inspected it savagely, desperately. His full red lips drew back in a snarl.

"How did you do it?" he cried shrilly. "You must tell me! I—I—I will kill you if you do not tell me!"

The blue-jowled man was watching Von Holtz. Now his lips twisted disgustedly. He turned to Tommy and narrowed his eyes.

"Look here," he rumbled. "This fool's no good! I want the secret of that trick you did. What's your price?"

"I'm not for sale," said Tommy, smiling faintly.

The blue-jowled man regarded him with level eyes.

"My name's Jacaro," he said after an instant. "Maybe you've heard of me. I'm from Chicago."

Tommy smiled more widely. "To be sure," he admitted. "You were the man who introduced machine guns into gang warfare, weren't you? Your gunmen lined up half a dozen of the Buddy Haines gang against a wall and wiped them out, I believe. What do you want this secret for?"

The level eyes narrowed. They looked suddenly deadly.

"That's my business," said Jacaro briefly. "You know who I am. And I want that trick

y'did. I got my own reasons. I'll pay for it. Plenty. You know I got plenty to pay, too. Or else—"

"What?"

"Something'll happen to you," said Jacaro briefly. "I ain't sayin' what. But it's damn likely you'll tell what I want to know before it's finished. Name your price an' be damn quick!"

Tommy took his hand out of his pocket. He had a gun in it.

"The only possible answer to that," he said suavely, "is to tell you to go to hell. Get out! But Von Holtz stays here. He'd better!"

CHAPTER IV

Within half an hour after Jacaro's leaving, Smithers was in the village, laying in a stock of supplies and sending telegrams that Tommy had written out for transmission. Tommy sat facing an ashen Von Holtz and told him pleasantly what would be done to him if he failed to make the metallic ammonium needed to repair the big solenoid. In an hour Smithers was back, reporting that Jacaro was also sending telegrams but that he, Smithers, had stood over the telegraph operator until his own messages were transmitted. He brought back weapons, too—highly illegal things to have in New York State, where a citizen is only law-abiding when defenseless. And then four days of hectic, sleepless labor began.

On the first day one of Tommy's friends drove in in answer to a telegram. It was Peter Dalzell, with men in uniform apparently festooned about his car. He announced that a placard, warning passersby of smallpox within, had been added to the decorative signs upon the gate, and stared incredulously at the interior of the big brick barn. Tommy grinned at him and gave him plans and specifications of a light steel globe in which two men might be transported into the fifth dimension by a suitably operating device. Tommy had sat up all night drawing those plans. He told Dalzell just enough of what he was up against to enlist Dalzell's enthusiastic cooperation without permitting him to doubt Tommy's sanity. Dalzell had known Tommy as an amateur tennis player, but not as a scientist.

He marveled, refused to believe his eyes when he looked through the dimensoscope, and agreed that the whole thing had to be kept secret or the rescue expedition would be prevented from starting by the incarceration of both Tommy and Smithers in comfortable insane asylums. He feigned to admire Von Holtz, deathly white and nearly frantic with a corroding rage, and complimented Tommy on his taste for illegality. He even asked Von Holtz if he wanted to leave, and Von Holtz snarled insults at him. Von Holtz was beginning to work at the manufacture of metallic ammonium.

It was an electrolytic process, of course. Ordinarily, when—say— ammonium chloride is broken down by an electric current, ammonium is deposited at the cathode and instantly becomes a gas which dissolves in the water or bubbles up to the surface. With a mercury cathode, it is dissolved and becomes a metallic amalgam, which also breaks down into gas with much bubbling of the mercury. But Denham had worked out a way of delaying the breaking-down, which left him with a curiously white, spongy mass of metal which could be carefully melted down and cast, but not under any circumstances violently struck or strained.

Von Holtz was working at that. On the second day he delivered, snarling, a small ingot of the white metal. He was imprisoned in the lean-to shed in which the electrolysis went on. But Tommy had more than a suspicion that he was in communication with Jacaro.

"Of course," he said dryly to Smithers, who had expressed his doubts, "Jacaro had somebody sneak up and talk to him through the walls, or maybe through a bored hole. While there's a hope of finding out what he wants to know through Von Holtz, Jacaro won't try anything. Not anything rough, anyhow. We mustn't be bumped off while what we are doing is in our heads alone. We're safe enough—for a while."

Smithers grumbled.

"We need that ammonium," said Tommy, "and I don't know how to make it. I bluffed

that I could, and in time I might, but it would need time and meanwhile Denham needs us. Dalzell is going to send a plane over today, with word of when we can expect our own globe. We'll try to have the big catapult ready when it comes. And the plane will drop some extra supplies. I've ordered a submachine gun. Handy when we get over there in the tree-fern forests. Right now, though, we need to be watching. . . ."

Because they were taking turns looking through the dimensoscope. For signs of Denham and Evelyn. And Tommy was finding himself thinking wholly unscientific thoughts about Evelyn, since a pretty girl in difficulties is, of all possible things, the one most likely to make a man romantic.

In the four days of their hardest working, he saw her three times. The globe was wrecked and ruined. Its glass was broken out and its interior ripped apart. It had been pillaged so exhaustively that there was no hope that whatever device had been included in its design, for its return, remained even repairably intact. That device had not worked, to be sure, but Tommy puzzled sometimes over the fact that he had seen no mechanical device of any sort in the plunder that had been brought out to be demolished. But he did not think of those things when he saw Evelyn.

The Ragged Men's encampment was gone, but she and her father lingered furtively, still near the pillaged globe. The first day Tommy saw her, she was still blooming and alert. The second day she was paler. Her clothing was ripped and torn, as if by thorns. Denham had a great raw wound upon his forehead, and his coat was gone and half his shirt was in ribbons. Before Tommy's eyes they killed a nameless small animal with the truncheonlike weapon Evelyn carried. And Denham carted it triumphantly off into the shelter of the tree-fern forest. But to Tommy that shelter began to appear extremely dubious.

That same afternoon some of the Ragged Men came suspiciously to the globe and inspected it, and then vented a gibbering rage upon it with blows and curses. They seemed half-mad, these men. But then, all the Ragged Men seemed a shade less than sane. Their hatred for the Golden City seemed the dominant emotion of their existence.

And when they had gone, Tommy saw Denham peering cautiously from behind a screening mass of fern. And Denham looked sick at heart. His eyes lifted suddenly to the heavens, and he stared off into the distance again, and then he regarded the heavens again with an expression that was at once of the utmost wistfulness and the uttermost of despair.

Tommy swung the dimensoscope about and searched the skies of that other world. He saw the flying machine, and it was a swallowwinged device that moved swiftly, and now soared and swooped in abrupt short circles almost overhead. Tommy could see its pilot, leaning out to gaze downward. He was no more than a hundred feet up, almost at the height of the tree-fern tops. And the pilot was moving too swiftly for Tommy to be able to focus accurately upon his face, but he could see him as a man, an indubitable man in no fashion distinguishable from the other men of this earth. He was scrutinizing the globe as well as he could without alighting.

He soared upward, suddenly, and his plane dwindled as it went toward the Golden City.

And then, inevitably, Tommy searched for the four Ragged Men who had inspected the globe a little while since. He saw them, capering horribly behind a screening of verdure. They did not shake their clenched fists at the flying machine. Instead, they seemed filled with a ghastly mirth. And suddenly they began to run frantically for the far distance, as if bearing news of infinite importance.

And when he looked back at Denham, it seemed to Tommy that he wrung his hands before he disappeared.

But that was the second day of the work upon our own world, and just before sunset there was a droning in the earthly sky above the laboratory, and Tommy ran out, and somebody shot at him from a patch of woodland a quarter of a mile away from the brick

building. Isolated as Denham's place was, the shot would go unnoticed. The bullet passed within a few feet of Tommy, but he paid no attention. It was one of Jacaro's watchers, no doubt, but Jacaro did not want Tommy killed. So Tommy waited until the plane swooped low—almost to the level of the laboratory roof—and a thickly padded package thudded to the ground. He picked it up and darted back into the laboratory as other bullets came from the patch of woodland.

"Funny," he said dryly to Smithers, inside the laboratory again; "they don't dare kill me—yet—and Von Holtz doesn't dare leave or refuse to do what I tell him to do; and yet they expect to lick us."

Smithers growled. Tommy was unpacking the wrapped package. A grim, blued-steel thing came out of much padding. Boxes tumbled after it.

"Submachine gun," said Tommy, "and ammunition. Jacaro and his little pals will try to get in here when they think we've got the big solenoid ready for use. They'll try to get it before we can use it. This will attend to them."

"An' get us in jail," said Smithers calmly, "for forty-'leven years."

"No," said Tommy, and grinned. "We'll be in the fifth dimension. Our job is to fling through the catapult all the stuff we'll need to make another catapult to fling us back again."

"It can't be done," said Smithers flatly.

"Maybe not," agreed Tommy, "especially since we ruin all our springs and one gimbal ring every time we use the thing. But I've got an idea. I'll want five coils with hollow iron cores, and the whole works shaped like this, with two holes bored so. . .

He sketched. He had been working on the idea for several days, and the sketch was ready in his mind to be transferred to paper.

"What you goin' to do?"

"Something crazy," said Tommy. "A mirror isn't the only thing that changes angles to right ones."

"You're the doctor," said the imperturbable Smithers.

He set to work. He puzzled Tommy sometimes, Smithers did. So far he hadn't asked how much his pay was going to be. He'd worked unintermittently. He had displayed a colossal, a tremendous calmness. But no man could work as hard as Smithers did without some powerful driving-force. It was on the fourth day that Tommy learned what it was.

The five coils had been made, and Tommy was assembling them with an extraordinary painstaking care behind a screen, to hide what he was doing. He'd discovered a peep-hole bored through the brick wall from the lean-to where Von Holtz worked. He was no longer locked in there. Tommy abandoned the pretense of imprisonment after finding an automatic pistol and a duplicate key to the lock in Von Holtz's possession. He'd had neither when he was theoretically locked up, and Tommy laughed.

"It's a farce, Von Holtz," he said dryly, "this pretending you'll run away. You're here spying now, for Jacaro. Of course. And you don't dare harm either of us until you find out from me what you can't work out for yourself, and know I have done. How much is Jacaro going to pay you for the secret of the catapult, Von Holtz?"

Von Holtz snarled. Smithers moved toward him, his hands closing and unclosing. Von Holtz went gray with terror.

"Talk!" said Smithers.

"A—a million dollars," said Von Holtz, cringing away from the brawny red-headed man.

"It would be interesting to know what use it would be to him," said Tommy dryly. "But to earn that million you have to learn what we know. And to learn that, you have to help us do it again, on the scale we want. You won't run away. So I shan't bother to lock you up hereafter. Jacaro's men come and talk to you at night, don't they?"

Von Holtz cringed again. It was an admission.

"I don't want to have to kill any of them," said Tommy pleasantly, "and we'll all be classed as mad if this thing gets Out. So you go and talk to them in the lane

when you want to, Von Holtz. But if any of them come near the laboratory, Smithers and I will kill them, and if Smithers is hurt I'll kill you; and I don't imagine Jacaro wants that, because he expects you to build another catapult for him. But I warn you, if I find another gun on you I'll thrash you."

Von Holtz's pallor changed subtly from the pallor of fear to the awful lividness of rage.

"You—Gott! You dare threaten—" He choked upon his own fury.

"I do," said Tommy. "And I'll carry out the threat."

Smithers moved forward once more.

"Mr. Von Holtz," he said in a very terrible steadiness, "I aim to kill you some time. I ain't done it yet because Mr. Reames says he needs you a while. But I know you got Miss Evelyn marooned off in them fern-woods on purpose! And—God knows she wouldn't ever look at me, but—I aim to kill you some time!"

His eyes were flames. His hands closed and unclosed horribly. Von Holtz gaped at him, shocked out of his fury into fear again. He went unsteadily back to his lean-to. And Smithers went back to the dimensoscope. It was his turn to watch that other world for signs of Denham and Evelyn, and for any sign of danger to them.

Tommy adjusted the screen before the~ bench on which he was working, so Von Holtz could not see his task, and went back to work. It was a rather intricate task he had undertaken, and before the events of the past few days he would have said it was insane. But now he was taking it quite casually.

Presently he said, "Smithers."

Smithers did not look away from the brass tube.

"Yeah?"

"You're thinking more about Miss Denham than her father."

Smithers did not reply for a moment. Then he said, "Well? What if I am?"

"I am, too," said Tommy quietly. "I've never spoken to her, and I daresay she's never even heard of me, and she certainly has never seen me, but—"

Smithers said with a vast calmness, "She'll never look at me, Mr. Reames. I know it. She talks to me, an' laughs with me, but she's never sure-'nough looked at me. An' she never will. But I got the right to love her."

Tommy nodded very gravely.

"Yes. You have. So have I. And so, when that globe comes, we both get into it with what arms and ammunition we can pack in, and go where she is, to help her. I intended to have you work the switch and send me off. But you can come, too."

Smithers was silent. But he took his eyes from the dimensoscope eyepiece and regarded Tommy soberly. Then he nodded and turned back. And it was a compact between the two men that they should serve Evelyn, without any rivalry at all.

Tommy went on with his work. The essential defect in the catapult Denham had designed was the fact that it practically had to be rebuilt after each use. And, moreover, the metallic ammonium was so fugitive a substance that it was hard to keep. Once it had been strained by working, it gradually adverted to a gaseous state and was lost. And while he still tried to keep the little catapult in a condition for use, he was at no time sure that he could send a pair of automatics and ammunition through in a steel box at any moment that Denham came close enough to notice a burning smoke-fuse attached.

But he was working on another form of catapult entirely, now. In this case he was using hollow magnets placed at known angles to each other. And they were so designed that each one tended to adjust its own hollow bore at right angles to the preceding one, and each one would take any moving, magnetic object and swing it through four successive right angles into the fifth dimension.

He fitted the first magnet on twin rods of malleable copper, which also would carry the current which energized the coil. He threaded the second upon the same twin supports. When the current was passed through the two of them, the magnetic field itself twisted the

magnets, bending the copper supports and placing the magnets in their proper relative positions. A third magnet on the same pair of rods, and a repetition of the experiment, proved the accuracy of the idea. And since this device, like the dimensoscope, required only a forty-five-degree angle to our known dimensions, instead of a right angle as the other catapult did, Tommy was able to work with ordinary and durable materials. He fitted on the last two coils and turned on the current for his final experiment. And as he watched, the twin three-eighths-inch rods twisted and writhed in the grip of the intangible magnetic force. They bent, and quivered, and twisted. . . . And suddenly there seemed to be a sort of inaudible snap, and one of the magnets hurt the eyes that looked at it, and only the edge of the last of the series was visible.

Tommy drew in his breath sharply.

"Now we try it," he said tensely. "I was trying to work this as the mirrors of the dimensoscope were fitted. Let's see."

He took a long piece of soft-iron wire and fed it into the hollow of the first magnet. He saw it come out and bend stiffly to enter the hollow of the second. It required force to thrust it through. It went still more stiffly into the third magnet. It required nearly all his strength to thrust it on, and on. . . . The end of it vanished. He pushed two feet or more of it beyond the last place where it was visible. It went into the magnet that hurt one's eyes. After that it could not be seen.

Tommy's voice was strained. "Swing the dimensoscope, Smithers," he ordered.

"See if you can see the wire. The end of it should be in the other world."

It seemed an age, an eon, that Smithers searched. Then, "Move it," he said.

Tommy obeyed.

"It's there," said Smithers evenly. "Two or three feet of it."

Tommy drew a deep, swift breath of relief.

"All right!" he said crisply. "Now we can fling anything we need through there, when our globe arrives. We can build up a dump of supplies, all sent through just before we slide through in the globe."

"Yeah," said Smithers. "Uh—Mr. Reames. There's a bunch of Ragged Men in sight, hauling something heavy behind them. I don't know what it's all about."

Tommy went to the brass tube and stared through it. The tree-fern forest, drawing away in the distance. The vast and steaming morass. The glittering city, far, far in the distance.

And then a mob of the Ragged Men, hauling at some heavy thing. They were a long way off. Some of them came capering on ahead, and Tommy swung the dimensoscope about to see Denham and Evelyn dart for cover and vanish amid the tree-ferns. Denham was as ragged as the Ragged Men, by now, and Evelyn's case was little better.

Frightened for them, Tommy swung the instrument about again. But they had not been seen. The leaders who ran gleefully on ahead were merely in haste. And they were followed more slowly by burly men and lean ones, whole men and limping men, who hauled frantically on long ropes of hide, dragging some heavy thing behind them. Tommy saw it only indistinctly as the filthy, nearly naked bodies moved. But it was an intricate device of a golden-colored metal, and it rested upon the crudest of possible carts. The wheels were sections of tree trunks, pierced for wooden axles. The cart itself was made of the most roughly hewed of timbers. And there were fifty or more of the Ragged Men who dragged it.

The men in advance now attacked the underbrush at the edge of the forest. They worked with a maniacal energy, clearing away the long fern fronds while they capered and danced and babbled excitedly.

Irrelevantly, Tommy thought of escaped galley slaves. Just such hard-bitten, vice-ridden men as these, and filled with just such a mad, gibbering hatred of the free men they had escaped from. Certainly these men had been civilized once. As the golden-metal device came nearer, its intricacy was the more apparent. No savages could utilize a device

like this one. And there was a queer deadliness in the very grace of its outlines. It was a weapon of some sort, but whose nature Tommy could not even guess.

And then he caught the gleam of metal also in the fern-forest. On the ground. In glimpses and in fragments of glimpses between the swarming naked bodies of the Ragged Men, he pieced together a wholly incredible impression. There was a roadway skirting the edge of the forest. It was not wide; not more than fifteen feet at most. But it was a solid roadbed of metal! The dull silver-white of aluminum gleamed from the ground. Two or more inches thick and fifteen feet wide, there was a seamless ribbon of aluminum that vanished behind the tree-ferns on either side.

The intricate device of golden metal was set up, now, and a shaggy, savage-seeming man mounted beside it grinning. He manipulated its levers and wheels with an expert's assurance. And Tommy saw repairs upon it. Crude repairs, with crude materials, but expertly done. Done by the Ragged Men, past doubt, and so demolishing any idea that they came of a savage race.

"Watch here, Smithers," said Tommy grimly.

He set to work upon the little catapult after Denham's design. His own had seemed to work, but the other was more sure. This would be an ambush the Ragged Men were preparing, and of course they would be preparing it for men of the Golden City. The plane had sighted Denham's steel globe. It had hovered overhead, and carried news of what it had seen to the Golden City. And here was a roadway that must have been made by the folk of the Golden City at some time or another. Its existence explained why Denham remained nearby. He had been hoping that along its length would travel some vehicle containing civilized people to whom he could signal and ultimately explain his plight. And, being near the steel globe, his narrative would have its proofs at hand.

And now it was clear that the Ragged Men expected some ground vehicle, too. They were preparing for it. They were setting a splendid ambush, with a highly treasured weapon they ordinarily kept hidden. Their triumphant hatred could apply to nothing else than an expectation of inflicting injury on men of the Golden City.

So Tommy worked swiftly on the catapult. A new little ring of metallic ammonium was ready, and so were the necessary springs. The Ragged Men would lay their ambush. The men of the Golden City might enter it. They might. But the aviator who had spotted the globe would have seen the shredded contents of the sphere about. He would have known the Ragged Men had found it. And the men who came in a ground vehicle from the Golden City should be expecting just such an ambush as was being laid.

There would be a fight, and Tommy, somehow, had no doubt that the men of the Golden City would win. And when they had cleared the field he would fling a smoking missile through the catapult. The victors should see it and should examine it. And though writing would serve little purpose, they should at least recognize it as written communication in a language other than their own. And mathematical diagrams would certainly be lucid, and proof of a civilized man sending the missile, and photographs. . .

The catapult was ready, and Tommy prepared his message-carrying projectile. He found snapshots and included them. He tore out a photograph of Evelyn and her father, which had been framed above a work bench in the laboratory. He labored, racking his brain for a means of conveying the information that the globe was of any other world. . . . And suddenly he had an idea. A cord attached to his missile would lead to nothingness from either world, yet one end would be in that other world, and the other end in this. A wire would be better. Tugs upon it would convey the idea of living beings nearby but invisible. The photograph would identify Denham and his daughter as associated with the phenomenon and competent to explain it.

Tommy worked frantically to get the thing ready. He almost prayed that the men of the Golden City would be victors, would find his little missile when the fray was over, and would try to comprehend it. .

All he could do was try.

Then Smithers said, from the dimensoscope, "They're all set, Mr. Reames. Y'better look."

Tommy stared through the eyepiece. Strangely, the golden weapon had vanished. All seemed to be exactly as before. The cleared-away underbrush was replaced. Nothing was in any way changed from the normal in that space upon a mad world. But there was a tiny movement and Tommy saw a Ragged Man. He was lying prone upon the earth. He seemed either to hear or see something, because his lips moved as he spoke to another invisible man beside him, and his expression of malevolent joy was horrible.

Tommy swung the tube about. Nothing. . . . But suddenly he saw swiftly moving winkings of sunlight from the edge of the tree-fern forest. Something was moving in there, moving with lightning swiftness along the fifteen-foot roadway of solid aluminum. It drew nearer, and more near. .

The carefully camouflaged ambushade was fully focused and Tommy was watching tensely when the thing happened.

He saw glitterings through the tree fronds come to a smoothly decelerated stop. There was a pause; and suddenly the underbrush fell flat. As if a single hand had smitten it, it wavered, drooped, and lay prone. The golden weapon was exposed, with its brawny and horribly grinning attendant. For one-half a split-second Tommy saw the wheeled thing in which half a dozen men of the Golden City were riding. It was graceful and streamlined and glittering. There was a platform on which the steel sphere would have been mounted for carrying away.

But then there was a sudden intolerable light as the men of the Golden City reached swiftly for peculiar weapons beside them. The light came from the crudely mounted weapon of the Ragged Men, and it was an unbearable actinic glare. For half a second, perhaps, it persisted, and died away to a red flame which leaped upward and was not.

Then the vehicle from the Golden City was a smoking, twisted ruin. Four of the six men in it were blasted, blackened crisps. Another staggered to his feet, struggled to reach a weapon and could not lift it, and twitched a dagger from his belt and fell forward; and Tommy could see that his suicide was deliberate.

The last man, alone, was comparatively unharmed by the blast of light. He swept a pistol-like contrivance into sight. It bore swiftly upon the now surging, yelling horde of Ragged Men. And one—two—three of them seemed to scream convulsively before they were trampled under by the rest.

But suddenly there were a myriad little specks of red all over the body of the man at bay. The pistol-like thing dropped from his grasp as his whole hand became encrimsoned. And then he was buried beneath the hating, blood-lusting mob of the forest men.

CHAPTER V

An hour later, Tommy took his eyes away from the dimensoscope eyepiece. He could not bear to look any longer.

"Why don't they kill him?" he demanded sickly, ifiled with a horrible, a monstrous rage. "Oh, why don't they kill him?"

He felt maddeningly impotent. In another world entirely, a mob of half-naked renegades had made a prisoner. He was not dead, that solely surviving man from the Golden City. He was bound, and the Ragged Men guarded him closely, and his guards were diverting themselves unspeakably by small tortures, minor tortures, horribly painful but not

weakening. And they capered and howled with glee when the bound man writhed.

The prisoner was a brave man, though. Helpless as he was, he presently flung back his head and set his teeth. Sweat stood out in great droplets upon his body and upon his forehead. And he stilled his writhings and looked at his captors with a grim and desperate defiance.

The guards made gestures which were all too clear, all too luridly descriptive of the manner of death which awaited him. And the man of the Golden City was ashen and hopeless and utterly despairing—and yet defiant.

Smithers took Tommy's place at the eyepiece of the instrument. His nostrils quivered at what he saw. The vehicle from the Golden City was being plundered, of course. Weapons from the dead men were being squabbled over, even fought over. And the Ragged Men fought as madly among themselves as if in combat with their enemies. The big golden weapon on its cart was already being dragged away to its former hiding place. And somehow, it was clear that those who dragged it away expected and demanded that the solitary prisoner not be killed until their return.

It was that prisoner, in the agony which was only the beginning of his death, who made Smithers's teeth set tightly.

"I don't see the Professor or Miss Evelyn," said Smithers in a vast calmness. "I hope to Gawd they—don't see this."

Tommy swung on his heel, staring and ashen.

"They were near," he said stridently. "I saw them! They saw what happened in the ambush! They'll—they'll see that man tortured!"

Smithers's hand closed and unclosed.

"Maybe the Professor'll have sense enough to take Miss Evelyn—uh—where she—can't hear," he said slowly, his voice level. "I hope so.,,

Tommy flung out his hands desperately.

"I want to help that man!" he cried savagely. "I want to do something! I saw what they promised to do to him. I want to—to kill him, even! It would be mercy!"

Smithers said, with a queer, stilly shock in his voice, "I see the Professor now. He's got that gun-thing in his hand. . . . Miss Evelyn's urging him to try to do something. . . . He's looking at the sky. - . . It'll be a long time before it's dark. . . . He's gone back out of sight. . .

"If we had some dynamite!" said Tommy desperately, "we could take a chance on blowing ourselves to bits and try to fling it through and into the middle of those devils. - .

He was pacing up and down the laboratory, harrowed by the fate of that gray-faced man who awaited death by torture; filled with a wild terror that Evelyn and her father would try to rescue him and be caught to share his fate; racked by his utter impotence to do more than watch. . .

Then Smithers said thickly, "God!"

He stumbled away from the eyepiece. Tommy took his place, drythroated with terror. He saw the Ragged Men laughing uproariously. The bearded man who .was their leader was breaking the arms and legs of the prisoner so that he would be helpless when released from the stake to which he was bound. And if ever human beings looked like devils out of hell, it was at that moment. The method of breaking the bones was excruciating. The prisoner screamed. The Ragged Men rolled upon the ground in their maniacal mirth.

And then a man dropped, heaving convulsively, and then another, and still another. . . . The grim, gaunt figure of Denham came out of the tree-fern forest, the queer small golden-metal truncheon in his hand. A fourth man dropped before the Ragged Men quite realized what had happened. The fourth man himself was armed—and a flashing slender body came plunging from the forest and Evelyn flung herself upon the still-heaving body and plucked away that weapon.

Tommy groaned, in the laboratory in another world. He could not look away, and yet it seemed that the heart would be torn from his body by that sight. Because the Ragged Men had turned upon Denham with a concentrated ferocity, somehow knowing instantly that he

was more nearly akin to the men of the Golden City than to them. But at sight of Evelyn, her garments rent by the thorns of the forest, her white body gleaming through the largest tears, they seemed to go mad. And Tommy's eyes, glazing, saw the look on Denham's face as he realized that Evelyn had not fled, but had followed him in his desperate and wholly hopeless effort.

Then the swarming mass of Ragged Men surged over the two of them. Buried them under reaching, hating, lusting fiends who fought even among themselves to be first to seize them.

Then there was only madness, and Denham was bound beside the man of the Golden City, and Evelyn was the center of a fighting group which was suddenly flung aside by the bearded giant, and the encampment of the Ragged Men was bedlam. And somehow Tommy knew with a terrible clarity that a man of the Golden City to torture was bliss unimaginable to these half-mad enemies of that city. But a woman— He turned from the instrument, three-quarters out of his head. He literally did not see Von Holtz gazing furtively in the doorway. His eyes were fixed and staring. It seemed that his brain would burst.

Then he heard his own voice saying with an altogether unbelievable steadiness, "Smithers! They've got Evelyn. Get the submachine gun."

Smithers cried out hoarsely. His face was not quite human, for an instant. But Tommy was bringing the work bench on which he had installed his magnetic catapult, close over by the dimensoscope.

"This cannot work," he said in the same incredible calmness. "Not possibly. It should not work. It will not work. But it has to work!"

He was clamping the catapult to a piece of heavy timber.

"Put the gun so it shoots into the first magnet," he said steadily.

"The magnet windings shouldn't stand the current we've got to put into them. They've got to."

Smithers's fingers were trembling and unsteady. Tommy helped him, not looking through the dimensoscope at all.

"Start the dynamo," he said evenly—and marveled foolishly at the voice that did not seem to belong to him at all, talking so steadily and so quietly. "Give me all the juice you've got. We'll cut out this rheostat."

He was tightening a vise which would hold the deadly little weapon in place while Smithers got the crude-oil engine going and accelerated it recklessly to its highest speed. Tommy flung the switch. Rubber insulation steamed and stank. He pulled the trigger of the little gun for a single shot. The bullet flew into the first hollow magnet, just as he had beforehand thrust an iron wire. It vanished. The series of magnets seemed unharmed.

With a peculiar, dreamlike steadiness, Tommy put his hand where an undeflected bullet would go through it. He pressed the trigger again. He felt a tiny breeze upon his hand. But the bullet had been unable to elude the compound-wound magnets, each of which now had quite four times the designed voltage impressed upon its coils.

Tommy flung off the switch.

"Work the gun," he ordered harshly. "When I say fire, send a burst of shots through it. Keep the switch off except when you're actually firing, so—God willing—the coils don't burn out. Fire!"

He was gazing through the dimensoscope. Evelyn was struggling helplessly while two Ragged Men held her arms, grinning as only devils could have grinned, and others squabbled and watched with a fascinated attention some cryptic process which could only be the drawing of lots. . .

Tommy saw, and paid no attention. The machine gun beside him rasped suddenly. He saw a tree-fern frond shudder. He saw a gaping, irregular hole where a fresh frond was uncurling. Tommy put out his hand to the gun.

"Let me move it, bench and all," he said steadily. "Now try it again. Just a burst."

Again the gun rasped. And the earth was kicked up suddenly where the bullets struck

in that other world. The little steel-jacketed missiles were deflected by the terribly overstrained magnets of the catapult, but their energy was not destroyed. It was merely altered in direction. Fired within the laboratory upon our own and normal world, the bullets came out into the world of tree-ferns and monstrous things. They came out, as it happened, sidewise instead of point first, which was due to some queer effect of dimension change upon an object moving at high velocity. Because of that, they ricocheted much more readily, and where they struck they made a much more ghastly wound. But the first two bursts caused no effect at all. They were not even noticed by the Ragged Men. The noise of the little gun was thunderous and snarling in the laboratory, but in the world of the fifth dimension there was no sound at all.

"Like this," said Tommy steadily. "Just like this. . . . Now fire!"

He had tilted the muzzle upward. And then with a horrible grim intensity he traversed the gun as it roared.

And it was butchery. Three Ragged Men were cut literally to bits before the storm of bullets began to do real damage. The squabbling group, casting lots for Evelyn, had a swath of dead men in its midst before snarls begun had been completed.

"Again," said Tommy coldly. "Again, Smithers, again!"

And again the little gun roared. The burly bearded man clutched at his throat—and it was a gory horror. A Thing began to run insanely. It did not even look human any longer. It stumbled over the leader of the Ragged Men and died as he had done. The bullets came tumbling over themselves erratically. They swooped and curved and dispersed themselves crazily. Spinning as they were, at right angles to their line of flight, their trajectories were incalculable and their impacts were grisly.

The little gun fired ten several bursts, aimed in a desperate coldbloodedness, before the smell of burnt rubber became suddenly overpowering and the rasping sound of an electric arc broke through the rumbling of the crude-oil engine in the back.

Smithers sobbed.

"Burnt out!"

But Tommy waved his hand.

"I think," he said savagely, "that maybe a dozen of them got away. Evelyn's staggering toward her father. She'll turn him loose. That prisoner's dead, though. Didn't mean to shoot him, but those bullets flew wild."

He gave Smithers the eyepiece. Sweat was rolling down his forehead in great drops. His hands were trembling uncontrollably.

He paced shakenly up and down the laboratory, trying to shut out of his own sight the things he had seen when the bullets of his own aiming literally splashed into the living flesh of men. He had seen Ragged Men disemboweled by those spinning, knifelike projectiles. He had turned a part of the mad world of that other dimension into a shambles, and he did not regret it because he had saved Evelyn, but he wanted to shut out the horror of seeing what he had done.

"But now," he said uncertainly to himself, "they're no better off, except they've got weapons. . . . If that man from the Golden City hadn't been killed. . . ."

He was looking at the magnetic catapult, burned out and useless. His eyes swung suddenly to the other one. Just a little while since he had made ready a missile to be thrown through into the other world by that. It contained snapshots, and diagrams, and it was an attempt to communicate with the men of the Golden City without any knowledge of their language.

"But—I can communicate with Denham!"

He began to write feverishly. If he had looked out of the laboratory window, he would have seen Von Holtz running like a deer, waving his arms jerkily, and—when out of earshot of the laboratory—shouting loudly. And Von Holtz was carrying a small black box which Tommy would have identified instantly as a motion picture camera, built for amateurs but capable of taking pictures indoors and with a surprisingly small amount of light. And if

Tommy had listened, he might possibly have heard the beginnings of those shoutings to men hidden in a patch of woodland about a quarter of a mile away. The men, of course, were Jacaro's, waiting either until Von Holtz had secured the information that was wanted, or until an assault in force upon the laboratory would net them a catapult ready for use—to be examined, photographed, and duplicated at leisure.

But Tommy neither looked nor listened. He wrote feverishly, saying to Smithers at the dimensoscope, "Denham'll be looking around to see what killed those men. When he does, we want to be ready to shoot a smoke-bomb through to him, with a message attached."

Smithers made a gesture of no especial meaning save that he had heard. And Tommy went on writing swiftly, saying who he was and what he had done, and that another globe was being built so that he and Smithers could come with supplies and arms to help. .

"He's lookin' around now, Mr. Reames," said Smithers quietly. "He's picked up a ricocheted bullet an' is staring at it."

The crude-oil engine was running at a thunderous rate. Tommy fastened his note in the little missile he had made ready. He placed it under the solenoid of the catapult after Denham's design, with the springs and rings of metallic ammonium. He turned to Smithers.

"I'll watch for him," said Tommy unsteadily. "You know, watch for the right moment to fling it through. Slow up the generator a little. It'll rack itself to pieces."

He put his eye to the eyepiece. He winced as he saw again what the bullets of his aiming had done. But he saw Denham almost at once. And Denham was scratched and bruised and looked very far indeed from the ideal of a professor of theoretic physics, with hardly more than a few shreds of clothing left upon him, and a ten-days' beard upon his face. He limped as he walked. But he had stopped in the task of gathering up weapons to show Evelyn excitedly what it was that he had found. A spent and battered bullet, but indubitably a bullet from the world of his own ken. He began to stare about him, hopeful yet incredulous.

Tommy took his eye from the dimensoscope just long enough to light the fuse of the smoke-bomb.

"Here it goes, Smithers!"

He flung the switch. The missile with its thickly smoking fuse leaped upward as the concentric rings flickered and whirled bewilderingly. The missile hurt the eyes that watched it. It vanished. The solenoid dropped to the floor from the broken small contrivance.

Then Tommy's heart stood still as he gazed through the eyepiece again. He could see nothing but an opaque milkiness. But it drifted away, and he realized that it was smoke. More, Denham was staring at it. More yet, he was moving cautiously toward its source, one of the strange golden weapons held ready. . .

Denham was investigating.

The generator at the back of the laboratory slowed down. Smithers was obeying orders. Tommy hung close by the vision instrument, his hands moving vaguely and helplessly, as one makes gestures without volition when anxious for someone else to duplicate the movements for which he sets the example.

He saw Denham, very near, inspecting the smoking thing on the ground suspiciously. The smoke-fuse ceased to burn. Denham stared. After an age-long delay, he picked up the missile Tommy had prepared. And Tommy saw that there was a cord attached to it. He had fastened that cord when planning to try to communicate with the men of the Golden City, when he had expected them to be victorious.

But he saw Denham's face light up with pathetic hope. He called to Evelyn. He hobbled excitedly to her, babbling. .

Tommy watched, and his heart pounded suddenly as Evelyn turned and smiled in the direction in which she knew the dimensoscope must be. A huge butterfly, its wings a full yard across, fluttered past her head. Denham talked excitedly to her. A clumsy batlike thing swooped by overhead. Its shadow blanketed her face for an instant. A running animal, small and long, ran swiftly in full view from one side of the dimensoscope's field of vision to the

other. Then a snake, curiously horned, went writhing past. .

Denham talked excitedly. He turned and made gestures as of writing, toward the spot where he had picked up Tommy's message. He began to search for a charred stick where the Ragged Men had built a fire some days now past. A fleeing furry thing sped across his feet, running. .

Denham looked up. And Evelyn was staring now. She was staring in the direction of the Golden City. And now what was almost a wave of animals, all wild and all fleeing, swept across the field of vision of the dimensoscope. There were gazelles, it seemed—slenderlimbed, graceful animals, at any rate—and there were tiny hooved things which might have been ehippi, and then a monstrous armadillo clanked and rattled past. .

Tommy swung the dimensoscope. He gasped. All the animal world was in flight. The insects had taken to wing. Flying creatures were soaring upward and streaking through the clear blue sky, and all in the one direction. And then out of the morass came monstrous shapes; misshapen, unbelievable reptilian shapes, which fled bellowing thunderously for the tree-fern forest. They were gigantic, those things from the morass. They were hideous. They were things out of nightmares, made into flabby flesh. There were lizards and what might have been gigantic frogs, save that frogs possess no tails. And there were long and snaky necks terminating in infinitesimal heads, and vast palpitating bodies following those impossible small braincases, and long tapering tails that thrashed mightily as the ghastly things fled bellowing

And the cause of the mad panic was a slowly moving white curtain of mist. It was flowing over the marsh, moving with apparent deliberation, but, as Tommy saw, actually very swiftly. It shimmered and quivered and moved onward steadily. Its upper surface gleamed with elusive prismatic colors. It had blotted out the horizon and the Golden City, and it came onward. .

Denham made frantic, despairing gestures toward the dimensoscope. The thing was coming too fast. There was no time to write. Denham held high the cord that trailed from the message-bearing missile. He gesticulated frantically, and raced to the gutted steel globe and heaved mightily upon it and swung it about so that Tommy saw a great steel ring set in its side, which had been hidden before. He made more gestures, urgently, and motioned Evelyn inside.

Tommy struck at his forehead.

"It's poison gas," he muttered. "Revenge for the smashed-up vehicle. . . . They knew it by an automatic radio signal, maybe. This is their way of wiping out the Ragged Men. . . . Poison gas. . . . It'll kill Denham and Evelyn. . . - He wants me to do something. . . ."

He drew back, staring, straining every nerve to think. . . . And somehow his eyes were drawn to the back of the laboratory, and he saw Smithers teetering on his feet, with his hands clasped queerly to his body, and a strange man standing in the door of the laboratory with an automatic pistol in his hand. The automatic had a silencer on it, and its clicking had been drowned out, anyhow, by the roaring of the crude-oil engine.

The man was small and dark and natty. His lips were drawn back in a peculiar mirthless grin as Smithers teetered stupidly back and forth and then fell. .

The explosion of Tommy's own revolver astounded him as much as it did Jacaro's gunman. He did not even remember drawing it or aiming. The natty little gunman was blotted out by a spouting mass of white smoke—and suddenly Tommy knew what it was that Denham wanted him to do.

There was rope in a loose and untidy coil beneath a work bench. Tommy sprang to it in a queer, nightmarish activity. He knew what was happening, of course. Von Holtz had seen the magnetic catapult at work. That couldn't be destroyed or its workings hidden like the ring catapult of Denham's design. He'd gone out to call in Jacaro's men. And they'd shot down Smithers as a cold-blooded preliminary to the seizure of the instrument Jacaro wanted.

It was necessary to defend the laboratory. But Tommy could not spare the time. That

white mist was moving upon Evelyn and her father, in that other world. It was death, as the terror of the wild things demonstrated. They had to be helped. .

He knotted the rope to the end of the cord that vanished curiously somewhere among the useless mass of rings. He tugged at the cord—and it was tugged in return. Denham, in another world, had felt his signal and had replied to it. .

A window smashed suddenly and a bullet missed Tommy's neck by inches. He fired at that window, and absordedly guided the knot of the rope past its vanishing point. The knot ceased to exist and the rope crept onward—and suddenly moved more and more swiftly to a place where abruptly it was not. For the length of half an inch, the rope hurt the eyes that looked at it. Beyond that it was not possible to see it at all.

Tommy leaped up. He plunged ahead of two separate spurts of shots from two separate windows. The shots pierced the place where he had been. He was racing for the crude-oil engine. There was a chain wound upon a drum, there, and a clutch attached the drum to the engine.

He stopped and seized the repeating shotgun Smithers had brought as his own weapon against Jacaro's gangsters. He sent four loads of buckshot at the windows of the laboratory. A man yelled.

And Tommy dropped the gun to knot the rope to the chain, desperately, fiercely, in a terrible haste.

The chain began to pay out to that peculiar vanishing point which was here an entryway to another world—perhaps another universe.

A bullet nicked his ribs. He picked up the gun and fired it nearly at random. He saw Smithers moving feebly, and Tommy had a vast compassion for Smithers, but— He shuddered suddenly. Something had struck him a heavy blow in the shoulder. And something else battered at his leg. There was no sound that could be heard above the thunder of the crude-oil motor, but Tommy was queerly aware of buzzing things flying about him, and of something very warm flowing down his body and down his leg. And he felt very dizzy and weak and extremely tired. . . . He could not see clearly, either.

But he had to wait until Denham had the chain fast to the globe. That was the way he had intended to come back, of course. The ring was in the globe, and this chain was in the laboratory to haul the globe back from wherever it had been sent. And Von Holtz had disconnected it before sending away the globe with Denham in it. If the chain remained unbroken, of course it could be hauled in, as it would turn all necessary angles and force the globe to follow those angles, whatever they might be. .

Tommy was on his hands and knees, and men were saying savagely, "Where's that thing, hey? Where's th' thing Jacaro wants?"

He wanted to tell them that they should say whether the chain had stopped moving to a place where it ceased to exist, so that he could throw a clutch and bring Denham and his daughter back from the place where Von Holtz had marooned them when he wanted to steal Denham's secret. Tommy wanted to explain that. But the floor struck him in the face, and something said to him, "They've shot you."

But it did not seem to matter, somehow, and he lay very still until he felt himself strangling, and he was breathing in strong ammonia which made his eyes smart and his tired lungs gasp.

Then he saw flames, and heard a motor car roaring away from close by the laboratory.

"They've stolen the catapult and set fire to the place," he remembered dizzily, "and now they're skipping out. . . ."

Even that did not seem to matter. But then he heard the chain clank, next to him on the floor. The white mist! Denham and Evelyn waiting for the white mist to reach them, and Denham jerking desperately on the chain to signal that he was ready. .

The flames had released ammonia from the metal Von Holtz had made. That had roused Tommy. But it did not give him strength. It is impossible to say where Tommy's

strength came from, when somehow he crawled to the clutch lever, with the engine roaring steadily above him, and got one hand on the lever, and edged himself up, and up, and up, until he could swing his whole weight on that lever. That instant of dangling hurt excruciatingly, too, and Tommy saw only that the drum began to revolve swiftly, winding the chain upon it, before his grip gave way.

And the chain came winding in and in from nowhere, and the tall laboratory filled more and more thickly with smoke, and lurid flames appeared somewhere, and a rushing sound began to be audible as the fire roared upward to the inflammable roof, and the engine ran thunderously. .

Then, suddenly, there was a shape in the middle, of the laboratory floor. A huge globular shape which it hurt the eyes to look upon. It became visible out of nowhere as if evoked by magic amid the flames of hell. But it came, and was solid and substantial, and it slid along the floor upon small wheels until it wound up with a crash against the winding drum, and the chain shrieked as it tightened unbearably—and the engine choked and died.

Then a door opened in the monstrous globe. Two figures leaped out, aghast. Two ragged, tattered, strangely armed figures, who cried out to each other and started for the door. But the girl stumbled over Tommy and called, choking, to her father. Groping toward her, he found Smithers. And then Tommy smiled drowsily to himself as soft arms tugged bravely at him, and a slender, glorious figure staggered with him to fresh air.

"It's Von Holtz," snapped Denham, and coughed as he fought his way to the open. "I'll blast him to hell with these things we brought back. . .

That was the last thing Tommy knew until he woke up in bed with a feeling of many bandages and an impression that his lungs hurt.

Denham seemed to have heard him move. He looked in the door.

"Hullo, Reames. You're all right now."

Tommy regarded him curiously until he realized. Denham was shaved and fully clothed. That was the strangeness about him. Tommy had been watching him for many days as his clothing swiftly deteriorated and his beard grew.

"You are, too, I see," he said weakly. "I'm damned glad." Then he felt foolish, and querulous, and as if he should make some apology, and instead said, "But five dimensions does seem extreme. Three is enough for ordinary use, and four is luxurious. Five seems to be going a bit too far."

Denham blinked, and then grinned suddenly. Tommy had admired the man who could face so extraordinary a situation with such dogged courage, and now he found, suddenly, that he liked Denham.

"Not too far," said Denham grimly. "Look!" He held up one of the weapons Tommy had seen in that other world, one of the goldcolored truncheons. "I brought this back. The same metal they built that wagon of theirs with. All their weapons. Most of their tools—as I know. It's gold, man! They use gold in that world as we use steel here. That's why Jacaro was ready to kill to get the secret of getting there. Von Holtz enlisted him."

"How did you know—" began Tommy weakly.

"Smithers," said Denham. "We dragged both of you out before the lab went up in smoke. He's going to be all right, too. Evelyn's nursing both of you. She wants to talk to you, but I want to say this first:

You did a damned fine thing, Reames! The only man who could have saved us, and you just about killed yourself doing it. Smithers saw you swing that clutch lever with three bullets in your body. And you're a scientist, too. You're my partner, Reames, in what we do in the fifth dimension."

Tommy blinked. "But five dimensions does seem extreme. . . ."

"We are the Interdimensional Trading Company," said Denham, smiling. "Somehow, I think we'll find something in this world we can trade for the gold in that. And we've got to get there, Reames, because Jacaro will surely try to make use of that catapult principle you

worked out. He'll raise the devil; and I think the people of that Golden City would be worth knowing. No, we're partners. Sooner or later, you'll know how I feel about what you've done. I'm going to bring Evelyn in here now."

He vanished. An instant later Tommy heard a voice—a girl's voice. His heart began to pound. Denham came back into the room and with him was Evelyn. She smiled warmly upon Tommy, though as his eyes fell blankly upon the smart sport clothes she was again wearing, she flushed.

"My daughter Evelyn," said Denham. "She wants to thank you."

And Tommy felt a warm soft hand pressing his, and he looked deep into the eyes of the girl he had never before spoken to, but for whom he had risked his life, and whom he knew he would love forever. There were a thousand things crowding to his lips for utterance. He had watched Evelyn, and he loved her— "H-how do you do?" said Tommy, lamely. "I'm—awfully glad to meet you."

But before he was well he learned to talk more sensibly.