

the **IFTH** of **OOFTH**

By **WALTER S. TEVIS, JR.**

**Farnsworth had to go meddle
in a muddle and the results
. . . well, just wait and see!**

FARNSWORTH had invented a new drink that night. He called it a mulled sloe gin toddy. Exactly as fantastic as it sounds—ramming a red-hot poker into a mugful of warm red gin, cinnamon, cloves and sugar, and then *drinking* the fool thing—but like many of Farnsworth's ideas, it managed somehow to work out. In fact, its flavor had become completely accept-

able to me after the third one.

When he finally set the end of his steaming poker back on the coals for rest and regeneration, I leaned back warmly in my big leather chair—the one he had rigged up so that it would gently rock you to sleep if you pressed the right button—and said, “Oliver, your ingenuity is matched only by your hospitality.”

Farnsworth blushed and smiled.

Illustrated by GAUGHAN

He is a small, chubby man and blushes easily. "Thank you," he said. "I have another new one. I call it a jelled vodka fizz — you eat it with a spoon. You may want to try it later. It's — well — exceptional."

I suppressed a shudder at the thought of eating jelled vodka and said, "Interesting, very interesting," and since he didn't reply, we both stared at the fire for a while, letting the gin continue its pleasant work. Farnsworth's bachelor's home was very comfortable and relaxing, and I always enjoyed my Wednesday night visits there thoroughly. I suppose most men have a deep-seated love for open fires and liquor — however fantastically prepared — and deep, comfortable leather armchairs.

Then, after several minutes, Farnsworth abruptly bounced to his feet and said, "There's a thing I wanted to show you. Made it last week. Didn't pull it off too well, though."

"Really?" I said. I'd thought the drinks had been his usual weekly brainchild. They seemed quite enough.

"Yes," he said, trotting over to the door of the study. "It's downstairs in the shop. I'll get it." And he bounced out of the room, the paneled door closing as it had opened, automatically, behind him.

I TURNED back to the fire again, pleased that he had made something in the machine shop — the carpentry shop was in a shed in the backyard; the chemistry and optical labs in the attic — for he was his most proficient with his lathe and milling machines. His self-setting, variable-twist thumb bolt had been a beautiful piece of work and its patent had netted him, as had several other machined devices, a remarkable sum.

He returned in a minute, carrying a very odd-looking thing with him, and set it on the table beside my chair. I examined it silently for a minute while Farnsworth stood over me, half-smiling, his little green eyes wide, sparkling in the reflected, flickering light from the fire. I knew he was suppressing his eagerness for my comment, but I was uncertain what to say.

The thing, upon examination, appeared simple: a more or less cross-shaped construction of several dozen one-inch cubes, half of them of thin, transparent plastic, the other half made of thin little sheets of aluminum. Each cube seemed to be hinged to two others very cunningly and the arrangement of them all was somewhat confusing.

Finally, I said, "How many cubes?" I had tried to count them, but kept getting lost.

"Sixty-four," he said. "I think."
"You think?"

"Well—" He seemed embarrassed. "At least I *made* sixty-four cubes, thirty-two of each kind; but somehow I haven't been able to count them since. They seem to . . . get lost, or shift around, or something."

"Oh?" I was becoming interested. "May I pick it up?"

"Certainly," he said, and I took the affair, which was surprisingly lightweight, in my hands and began folding the cubes around on their hinges. I noticed then that some were open on one side and that certain others would fit into these if their hinging arrangements would allow them to.

I began folding them absently and said, "You could count them by marking them one at a time. With a crayon, for instance."

"As a matter of fact," he admitted, blushing again, "I tried that. Didn't seem to work out. When I finished, I found I had marked six cubes with the number one and on none of them could I find a two or three, although there were two fours, one of them written in reverse and in green." He hesitated. "I had used a red marking pencil." I saw him shudder slightly as he said it, although his voice had been casual-sounding enough. "I rubbed the numbers off with a

damp cloth and didn't . . . try it again."

"Well," I said. And then, "What do you call it?"

"A pentaract."

HE SAT back down again in his armchair. "Of course, that name really isn't accurate. I suppose a pentaract should really be a four-dimensional pentagon, and this is meant to be a picture of a five-dimensional cube."

"A picture?" It didn't look like a picture to me.

"Well, it couldn't *really* have five - dimensionality — length, width, breadth, ifth and oofth — or I don't think it could." His voice faltered a little at that. "But it's supposed to illustrate what you might call the layout of an object that did have those."

"What kind of object would that be?" I looked back at the thing in my lap and was mildly surprised to see that I had folded a good many of the cubes together.

"Suppose," he said, "you put a lot of points in a row, touching; you have a line — a one-dimensional figure. Put four lines together at right angles and on a plane; a square — two-dimensional. Six squares at right angles and extended into real space give you a cube — three dimensions. And eight cubes extended into four physical dimensions give you

a tesseract, as it's called—"

"And eight tesseracts make a pentaract," I said. "Five dimensions."

"Exactly. But naturally this is just a picture of a pentaract, in that sense. There probably isn't any ifth and oofth at all."

"I still don't know what you mean by a *picture*," I said, pushing the cubes around interestedly.

"You don't?" he asked, pursing his lips. "It's rather awkward to explain, but . . . well, on the surface of a piece of paper, you can make a very realistic picture of a cube—you know, with perspective and shading and all that kind of thing—and what you'd actually be doing would be illustrating a three-dimensional object, the cube, by using only two dimensions to do it with."

"And of course," I said, "you could *fold* the paper into a cube. Then you'd have a real cube."

He nodded. "But you'd have to use the third dimension—by folding the flat paper *up*—to do it. So, unless I could fold my cubes up through ifth or oofth, my pentaract will have to be just a poor picture. Or, really, eight pictures. Eight tesseracts, pictures of four-dimensional objects, stuck together to make a picture of five dimensions."

"Well!" I said, a bit lost. "And what do you plan to use it for?"

"Just curiosity." And then,

abruptly, looking at me now, his eyes grew wide and he bumped up out of his chair. He said breathlessly, "What have you done to it?"

I looked down at my hands. I was holding a little structure of eight cubes, joined together in a small cross. "Why, nothing," I said, feeling a little foolish. "I only folded most of them together."

"That's impossible! There were only twelve open ones to begin with! All of the others were six-sided!"

FARNSWORTH made a grab for it, apparently beside himself, and the gesture was so sudden that I drew back. It made Farnsworth miss his grab and the little object flew from my hands and hit the floor, solidly, on one of its corners. There was a slight bump as it hit, and a faint clicking noise, and the thing seemed to crumple in a very peculiar way. And sitting in front of us on the floor was one little one-inch cube, and nothing else.

For at least a full minute, we stared at it. Then I stood up and looked in my chair seat, looked around the floor of the room, even got down on my knees and peered under the chair. Farnsworth was watching me, and when I finished and sat down again, he asked, "No others?"



"No other cubes," I said, "anywhere."

"I was afraid of that." He pointed an unsteady finger at the one cube in front of us. "I suppose they're all in there." Some of his agitation had begun to wear off — you can, I suppose, get used to anything — and after a moment he said thoughtfully, "What was that you said about folding the paper to make a cube?"

I looked at him and managed an apologetic smile. I had been thinking the same thing. "What was that *you* said about having to go into another dimension to do it?"

He didn't smile back, but he got up and said, "Well, I doubt if it can bite," and bent over and picked the cube up, hefting its weight carefully in his hand. "It seems to weigh the same as the — sixty-four did," he said, quite calmly now. Then he looked at it closely and suddenly became agitated again. "Good heavens! Look at this!" He held it up.

On one side, exactly in the center, was a neat little hole, about a half-inch across.

I moved my head closer to the cube and saw that the hole was not really circular. It was like the iris diaphragm of a camera, a polygon made of many overlapping, straight pieces of metal, allowing an opening for light to

enter. Nothing was visible through the hole; I could see only an undefined blackness.

"I don't understand how . . ." I began, and stopped.

"Nor I," he said. "Let's see if there's anything in here."

HE PUT the cube up to his eye and squinted and peered for a minute. Then he carefully set it on the table, walked to his chair, sat down and folded his hands over his fat little lap.

"George," he said, "there is something in there." His voice now was very steady and yet strange.

"What?" I asked. What else do you say?

"A little ball," he said. "A little round ball. Quite misted over, but nonetheless a ball."

"Well!" I said.

"George, I'll get the gin."

He was back from the sideboard in what seemed an incredibly short time. He had the sloe gin in highball glasses, with ice and water. It tasted horrible.

When I finished mine, I said, "Delicious. Let's have another," and we did. After I drank that one, I felt a good deal more rational.

I set my glass down. "Farnsworth, it just occurred to me. Isn't the fourth dimension supposed to be *time*, according to Einstein?"

He had finished his second sloe gin highball, unmulled, by then. "Supposed to be, yes, according to Einstein. I call it ifth—or oofth—take your pick." He held up the cube again, much more confidently now, I noticed. "And what about the *fifth* dimension?"

"Beats me," I said, looking at the cube, which was beginning to seem vaguely sinister to me. "Beats the hell out of me."

"Beats me, too, George," he said almost gaily—an astonishing mood for old Farnsworth. He turned the cube around with his small, fat fingers. "This is probably all wrapped up in time in some strange way. Not to mention the very peculiar kind of space it appears to be involved with. Extraordinary, don't you think?"

"Extraordinary," I nodded.

"George, I think I'll take another look." And he put the cube back to his eye again. "Well," he said, after a moment of squinting, "same little ball."

"What's it doing?" I wanted to know.

"Nothing. Or perhaps spinning a bit. I'm not sure. It's quite fuzzy, you see, and misty. Dark in there, too."

"Let me see," I said, realizing that, after all, if Farnsworth could see the thing in there, so could I.

"In a minute. I wonder what sort of time I'm looking into—

past or future, or what?"

"And what sort of space . . ." I was saying when, suddenly, little Farnsworth let out a fantastic shriek, dropped the cube as if it had suddenly turned into a snake, and threw his hands over his eyes.

He sank back into his chair and cried, "My God! My God!"

I WAS apprehensive when the cube hit the floor, but nothing happened to it. It did not fold up into no cube at all, nor proliferate back into sixty-four of itself.

"What happened?" I asked, rushing over to Farnsworth, who was squirming about in his armchair, his face still hidden by his hands.

"My eye!" he moaned, almost sobbing. "It stabbed my eye! Quick, George, call me an ambulance!"

I hurried to the telephone and fumbled with the book, looking for the right number, until Farnsworth said, "Quick, George!" again and, in desperation, I dialed the operator and told her to send us an ambulance.

When I got back to Farnsworth, he had taken his hand from the unhurt eye and I could see that a trickle of blood was beginning to run down the other wrist. He had almost stopped squirming, but from his face it

was obvious that the pain was still quite intense.

He stood up. "I need another drink," he said, and began heading unsteadily for the sideboard, when he stepped on the cube, which was still lying in front of his chair, and was barely able to keep himself from falling headlong, tripping on it. The cube skidded a few feet, stopping, hole-side up, near the fire.

He said to the cube, enraged, "Drat you, I'll show you . . . !" and he reached down and swooped up the poker from the hearth. It had been lying there for mulling drinks, its end resting on the coals, and by now it was a brilliant cherry red. He took the handle with both hands and plunged the red-hot tip into the hole of the cube, pushing it down against the floor.

"I'll show you!" he yelled again, and I watched understandingly as he shoved with all his weight, pushing and twisting, forcing the poker down with angry energy. There was a faint hissing sound and little wisps of dark smoke came from the hole, around the edges of the poker.

Then there was a strange, sucking noise and the poker began to sink into the cube. It must have gone in at least eight or ten inches — completely impossible, of course, since it was a one-inch cube — and even Farnsworth be-

came so alarmed at this that he abruptly yanked the poker out of the hole.

As he did, black smoke arose in a little column for a moment and then there was a popping sound and the cube fell apart, scattering itself into hundreds of little squares of plastic and aluminum.

Oddly enough, there were no burn marks on the aluminum and none of the plastic seemed to have melted. There was no sign of a little, misty ball.

Farnsworth returned his right hand to his now puffy and quite bloody eye. He stood staring at the profusion of little squares with his good eye. His free hand was trembling.

Then there was the sound of a siren, becoming louder. He turned and looked at me balefully. "That must be the ambulance. I suppose I'd better get my toothbrush."

FARNSWORTH lost the eye. Within a week, though, he was pretty much his old chipper self again, looking quite dapper with a black leather patch. One interesting thing — the doctor remarked that there were powder burns of some sort on the eyelid, and that the eye itself appeared to have been destroyed by a small explosion. He assumed that it had been a case of a gun mis-

firing, the cartridge exploding in an open breech somehow. Farnsworth let him think that; it was as good an explanation as any.

I suggested to Farnsworth that he ought to get a green patch, to match his other eye. He laughed at the idea and said he thought it might be a bit showy. He was already starting work on another pentaract; he was going to find out just what . . .

But he never finished. Nine days after the accident, there was a sudden flurry of news reports from the other side of the world, fantastic stories that made the Sunday supplements go completely mad with delight, and we began to guess what had happened. There wouldn't be any need to build the sixty-four-cube cross and try to find a way of folding it up. We knew now.

It *had* been a five-dimensional cube, all right. And one extension of it had been in time — into the future; nine days into the future — and the other extension had been into a most peculiar kind of space, one that distorted sizes quite strangely.

All of this became obvious when, three days later, it happened on our side of the world and the Sunday supplements were scooped by the phenomenon itself, which, by its nature, required no newspaper reporting.

Across the entire sky of the

Western hemisphere there appeared — so vast that it eclipsed the direct light of the Sun from Fairbanks, Alaska, to Cape Horn — a tremendous human eye, with a vast, glistening, green pupil. Part of the lid was there, too, and all of it was as if framed in a gigantic circle. Or not exactly a circle, but a polygon of many sides, like the iris diaphragm of a camera shutter.

Toward nightfall, the eye blinked once and probably five hundred million people screamed simultaneously. It remained there all of the night, glowing balefully in the reflected sunlight, obliterating the stars.

A thousand new religious cults were formed that night, and a thousand old ones proclaimed the day as *The One Predicted for Centuries*.

Probably more than half the people on Earth thought it was God. Only two knew that it was Oliver Farnsworth, peering at a misty little spinning ball in a five-dimensional box, nine days before, totally unaware that the little ball was the Earth itself, contained in a little one-inch cube that was an enclave of swollen time and shrunken space.

WHEN I had dropped the pentaract and had somehow caused it to fold itself into two new dimensions, it had reached

out through fifth-dimensional space and folded the world into itself, and had begun accelerating the time within it, in rough proportion to size, so that as each minute passed in Farnsworth's study, about one day was passing on the world within the cube.

We knew this because about a minute had passed while Farnsworth had held his eye against the cube the second time—the first time had, of course, been the appearance over Asia—and nine days later, when we saw the same event from our position on the Earth in the cube, it was twenty-six hours before the eye was “stabbed” and withdrew.

It happened early in the morning, just after the Sun had left the horizon and was passing into eclipse behind the great circle that contained the eye. Someone stationed along a defense-perimeter station panicked—someone highly placed. Fifty guided missiles were launched, straight up, the most powerful on Earth. Each carried a hydrogen warhead. Even before the great shock wave from their explosion came crashing down to Earth, the eye had disappeared.

Somewhere, I knew, an unimaginably vast Oliver Farnsworth was squirming and yelping, carrying out the identical chain of events that I had seen happening in the past and that yet must be

happening now, along the immutable space-time continuum that Farnsworth's little cube had somehow by-passed.

The doctor had talked of powder burns. I wondered what he would think if he knew that Farnsworth had been hit in the eye with fifty infinitesimal hydrogen bombs.

For a week, there was nothing else to talk about in the world. Two billion people probably discussed, thought about and dreamed of nothing else. There had been no more dramatic happening since the creation of the Earth and Sun than the appearance of Farnsworth's eye.

But two people, out of those two billion, thought of something else. They thought of the unchangeable, pre-set space-time continuum, moving at the rate of one minute for every day that passed here on our side of the pentaract, while that vast Oliver Farnsworth and I, in the other-space, other-time, were staring at the cube that contained our world, lying on their floor.

On Wednesday, we could say, *Now he's gone to the telephone.* On Thursday, *Now he's looking through the book.* On Saturday, *By now he must be dialing the operator . . .*

And on Tuesday morning, when the Sun came up, we were together and saw it rise, for we

spent our nights together by then, because we had lost the knack of sleeping and did not want to be alone; and when the day had begun, we didn't say it, because we couldn't. But we thought it.

We thought of a colossal, cos-

mic Farnsworth saying, "I'll show you!" and shoving, pushing and twisting, forcing with all of his might, into the little round hole, a brilliantly glowing, hissing, smoking, red-hot poker.

—WALTER S. TEVIS, JR.



FORECAST

The idea of getting warriors back to one's own lines after they have been cut off by the enemy has always been a military goal. But not until recently was the technology available—so much so that the items supplied would bemuse scientists, not to mention soldiers, of only a generation ago. That is the basis of Frederik Pohl's novelet next month, which shows just why it isn't fair that a smart but luckless man like Mooney has to scrounge to make a living . . . while Harse is never bothered with the problem of how to live luxuriously . . . simply because he has a SURVIVAL KIT. There you have the title and the premise of Pohl's story, but wait till you learn what's in that survival kit and what it can do!

Fritz Leiber is back and GALAXY has him! After what may prove to be the longest layoff in the history of science fiction — which is much less important than that it was the most missed — he returns with an ingenious and moving novelet entitled TIME IN THE ROUND. Only Leiber could make a touching story out of this dilemma: poor Butcher suffers more than any dictator ever did — for everybody gives in to him because he is so punny and they are so impregnable! (The reason for the glad movie-type exclamation at the beginning of this paragraph: Leiber promises that this is just the first of many stories for GALAXY. Reason enough for Hollywood-type glee, wouldn't you say?)

There will be another novelet . . . short stories, of course . . . our regular features . . . and Willy Ley turns lawyer in WHO'LL OWN THE PLANETS? . . . A legal hearing in which he settles — beforehand — the real-estate disputes that would otherwise arise as soon as we head into space!