

# WORLDS OF **TOMORROW**

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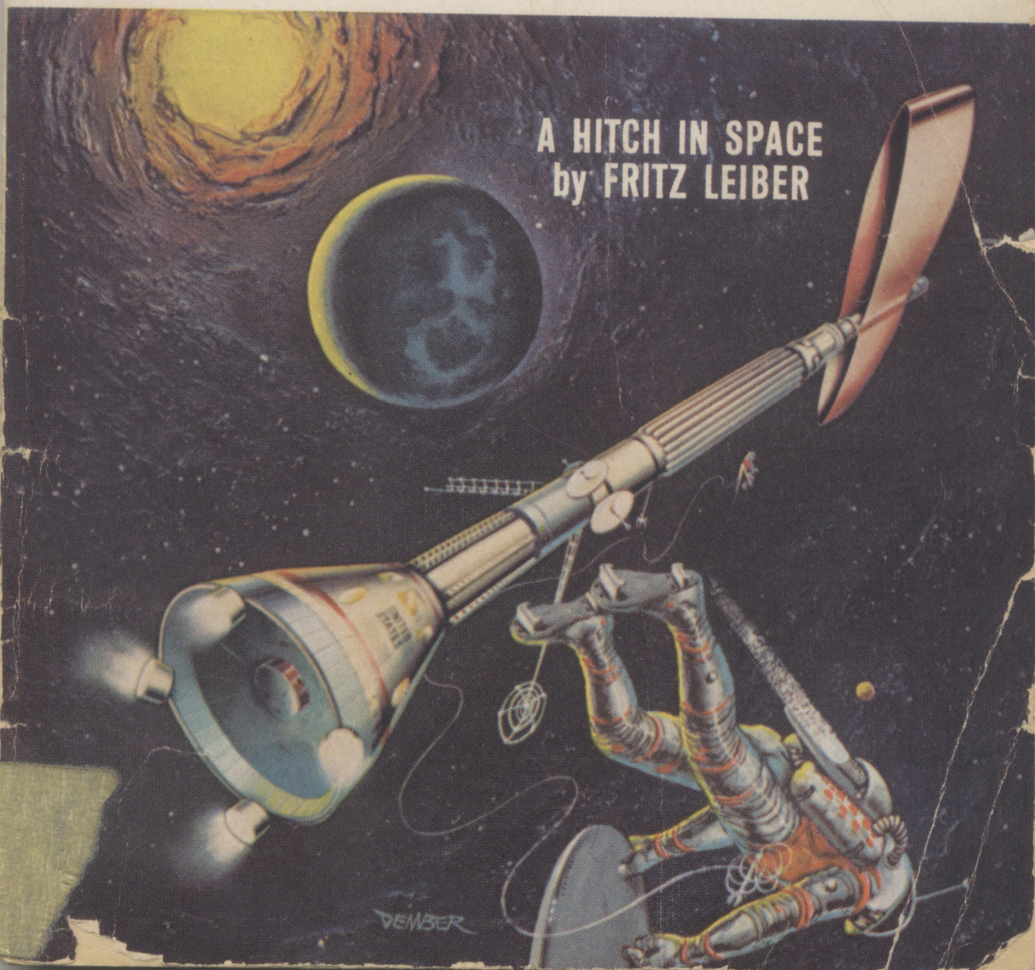
TO THE STARS  
**J. T. McIntosh**

THE IMPOSSIBLE  
STAR  
**Brian W. Aldiss**

ALL WE  
MARSMEN  
**Philip K. Dick**

THE NEW SCIENCE  
OF SPACE SPEECH  
**Vincent H. Gaddis**

A HITCH IN SPACE  
by **FRITZ LEIBER**



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# WORLDS OF TOMORROW

AUGUST 1963

Vol. 1 No. 3

ALL NEW STORIES

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WORLDS OF TOMORROW is published bi-monthly by GALAXY PUBLISHING CORP. Main Offices: 421 Hudson Street, New York 14, N.Y. 50c per copy. Subscription: (6 copies) \$2.50 per year in the United States, Canada, Mexico, South and Central America and U. S. Possessions. Elsewhere \$3.50. Application for second class entry pending at New York, N.Y. and at additional mailing offices. Copyright, New York 1963, by Galaxy Publishing Corp. Robert M. Guinn, President. All rights, including translations reserved. All material submitted must be accompanied by self-addressed stamped envelopes. The publisher assumes no responsibility for unsolicited material. All stories printed in this magazine are fiction, and any similarity between characters and actual persons is coincidental. Printed in the U.S.A. By The Guinn Co., Inc., N.Y. Title Reg. U.S. Pat. Off.

# HINDSIGHT and FORESIGHT

We have been getting an unexpectedly large volume of mail on our new offspring, *Worlds of Tomorrow*, and by gosh it has all been pretty complimentary. This does a lot of good for our vanity and makes us feel cheerful, but there is another question to which we'd like the answers: What *don't* you like? And what would you like us to do about it?

Several letters, for example, have in one way or another registered a mild complaint along the lines of, "Why don't you tell us what your policy is going to be?"

Well, this is a fair question. We thought of it. In fact, that is the traditional way to start a new magazine, all glowing promises and a detailed blueprint of in just what inimitable ways your new book will be superior to everything else on the stands. It was with a sense of pioneering that we elected not to do so.

It was our idea at that time that the magazine really ought to speak for itself. And actually, we think it has. If you have read and liked the first few issues, we suppose you will want to read, and we feel sure you will like, the issues which follow. In other words, it seems to us that it

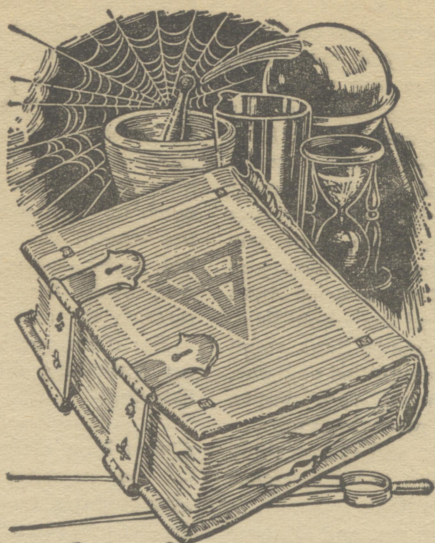
isn't absolutely essential for us to tell you what we're going to do . . . because we're doing it.

All the same, maybe it's a good idea, at that, for us to set down what it is we had in mind, so you can judge for yourself how close we're coming to the blueprint.

To begin with the most important part, the stories.

*Worlds of Tomorrow* will not—repeat, *not*—specialize in any one kind of science-fiction story. We propose to wheel very free indeed. For a while there a lot of science fiction was beginning to look a little weary to us—not because there weren't good writers, and not because they had forgotten how to tell good stories, but because it seemed to us there was an oppressive rigidity in what *kinds* of stories were being written. In part this may have been because of editorial policies. It is all very well to set a policy for a magazine, but from some points of view it began to look like all policy and no stories. Some kinds of stories just never get published, and indeed did not even get written, because their writers could see no markets for them. Heaven knows it is hard enough to write a really good sci-

Secrets  
entrusted  
to a  
few



## The Unpublished Facts of Life

THERE are some things that cannot be generally told — *things you ought to know*. Great truths are dangerous to some — but factors for *personal power and accomplishment* in the hands of those who understand them. Behind the tales of the miracles and mysteries of the ancients, lie centuries of their secret probing into nature's laws — their amazing discoveries of the *hidden processes of man's mind*, and the *mastery of life's problems*. Once shrouded in mystery to avoid their destruction by mass fear and ignorance, these facts remain a useful heritage for the thousands of men and women who privately use them in their homes today.

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ence-fiction story. This sort of fossilization of outlets was just one barrier too many. As you may have noted, for better or for worse we have opened up the policies on our other magazines, and although it has disturbed a few readers it seems to have pleased others—and, among other effects, has had the gratifying effect of enabling us to print new stories by a number of writers who for some time had deserted both these magazines and the whole field.

When it came time to think about what we would do with this new one, our final decision was very simple. Each story has to meet three tests:

If (1) we like it; and (2) we think you will like it; and (3) it's science fiction, we'll print it.

That's all we can say, and all there is to say, about the kind of stories you can expect to find in *Worlds of Tomorrow*. They may be as youthful and enjoyable as Arthur C. Clarke's *People of the Sea*, just concluded, or as mature and as brilliant as Philip Dick's *All We Marsmen*, just beginning. They may be short or long, witty or blood-and-thunder, rib-tickling or tragic; what we hope they will not be is either bad or dull; and that is the Whole of the Law.

Next, features.

We've had any number of questions about whether we will run book reviews, a science column, letters, etc. To these questions we can give only conditional answers: We will if we can make them very good ones. Check us out if we're wrong on our reasoning, but what we think goes as follows: Both *Galaxy* and *F&SF* have science columns, and pretty

good ones; four of the seven magazines in the field already have regular book reviews; the same number, though not the same magazines, already have letter columns. We see no reason why every sf magazine should be just like every other sf magazine, so unless and until we can come up with something as good as the best in each of these areas—if not better—we think we might as well avoid the formality of going through the motions.

But if anyone has any suggestions for something different . . . we're listening!

Something different, in our view, is our series of articles on how close today's fact is coming to the predictions science-fiction has made for tomorrow. Last issue we ran R. C. W. Ettinger's *The Prospects of Immortality*—of which, by the way, you will be hearing a good deal more, to judge by the amount of excitement our publication of the piece has stirred up. The present article is Vincent H. Gaddis's *The New Science of Space Speech*; what the one in the next issue is we cannot say—on this sort of thing, you can't work very far ahead!—except that there are half a dozen separate articles commissioned and in the work, and we'll manage to have one of them ready in time to go to the printer . . .

Exactly which one it will be, though, we are not prepared to announce. That's the whole point, you see. As each issue gets put together, it is as much of a surprise to us as it is to you!

—FREDERIK POHL

# A HITCH IN SPACE

BY FRITZ LEIBER

ILLUSTRATED BY GRAY

**My Space-partner was a good reliable sidekick—but *his* partner was something else!**

Once when I was doing a hitch with the Shaulan Space Guard out Scorpio way, my partner Jeff Bogart developed just about the most harmless psychosis you could imagine: he got himself an imaginary companion.

And the imaginary companion turned out to be me.

Well, I'm a pretty nice guy and so having two of me in the ship didn't seem a particularly bad idea. At first. In fact there'd be advantages of it, I thought. For instance, Jeff liked to talk a weary lot ... and the imaginary Joe Hansen could spell me listening to him, while I projected a book or just harkened to the wheels going

around in my own head against the faint patter of starlight on the hull.

I met Jeff first at a space-rodeo, oddly enough, but now the two of us were out on a servicing check of the orbital beacons and relays and rescue depots of the five planets of the Shaulan system. A completely routine job, its only drawback that it was lengthy. Our ship was an ionic jeep that looked like a fancy fountain pen, but was very roomy for three men — one of them imaginary.

I caught on to Jeff's little mania by overhearing him talking to me. I'd be coming back from the head or stores or linear accelerator or my bunk, and I'd hear him yakking

at me. It embarrassed me the first time, how to go back into the cabin when the other me was there. But I just swam in, and without any transition-strain at all that I could observe Jeff looked around at me, smiling sort of glaze-eyed, and said warmly, "Joe. My buddy Joe. Am I glad they paired us."

If Jeff had a major fault, as opposed to a species of nuttiness, it was that he was strictly a speak-only-good, positive-thinking guy who always deferred to me. Even idolized me, if you can imagine that. He'd give me such fulsome praise I'd be irked ten times an orbit.

Another thing that helped me catch on was that he always called the other me Joseph.

At first I thought the whole thing might be a gag, or maybe a deliberate way of letting off steam against me without violating his always-a-sweet-guy code — like happy husbands cursing in the bathroom — but then came the scrambled eggs.

I'd slept late and when I squinted into the cabin there was Jeff hovering over a plate of yellow fluff and shaking his finger at my empty seat and saying, "Dammit, Joseph, eat your scrambled eggs, I cooked 'em specially for you," and when he crawled out toward the galley a couple seconds later he was saying, "Now you start on those eggs, Joseph, before I get back."

I thought for a bit and then I slid into my place and polished them off.

When he floated in with the coffee he gave me another of those glaze-eyed God-fearing looks — but just a mite disappointed, I thought — and said, "Dammit, Joe, you're perfect! You always clean your plate."

Apparently when I was there, Joseph just didn't exist for Jeff. And vice versa. It was sort of eerie, especially with the hum of space in my ears like a seashell and nobody else for five million miles.

Beginning with the scrambled eggs, I discovered that Jeff didn't exactly idolize Joseph — or even take with him the attitude of "My buddy can do no wrong," like he did with me. I overheard him criticizing Joseph. Reasonably at first; then I heard him chewing him out — next bullying him.

It made me wistful, that last, thinking how good it would feel to be full-bloodedly cursed to my face once in a while instead of all the sweetness and light. And right there I got the idea for some amateur therapy, Shaula-Deva help me.

I waited for a moment when we were both relaxed and then I said, "Jeff, the trouble with you is you're too nice. You ought to criticize things more. For a starter, criticize me. Tell me my faults. Go ahead."

He flushed a little and said, "Dammit, Joe, how can I? You're perfect!"

"No man is perfect, Jeff," I told him solemnly, feeling pretty foolish.

"But you're my buddy I always can trust," he protested, squirming a bit. "I wish you wouldn't talk this way."



“Jeff, you can’t trust anybody too far,” I said. “Even good guys can do bad things. When I was a boy there was a kid named Harry I practically worshipped. We lived on a pioneer world of Fomalhaut that had good snow, and we’d hitch rides with our sleds off little airscrew planes taking off. We’d each have a long white line on his sled and loop it beforehand around the plane’s tail-gear and back to the sled. Then we’d hide. As soon as the pilot got aboard we’d jump on our sleds and each grab the free end of his line and have one comet of a ride, until the plane took off. Then we’d quick let go.

“Well, one frosty morning I let go and nothing happened, except I started to rise. Harry had tied the free end of my line tight to my sled.

“I could have just rolled off, I suppose, but I didn’t want to lose my sled or my line either. Luckily I had a sheath knife handy and I used it. I even made a whizeroo of a landing. But ever afterwards my feelings toward Harry—”

“Stop it, please, Joe!” Jeff interrupted, very red in the face and shaking a little. “That boy Harry was utterly evil. And I don’t want to hear any more about this, or anything like it, ever again. Understand?”

I told him sure I did. Heck, I could see I’d gone the wrong way about it. I even begged his pardon.

After that I just sweated it out. But I found I couldn’t spend much time on books or my thoughts, I’d keep listening for what Jeff was saying to Joseph. And sometimes

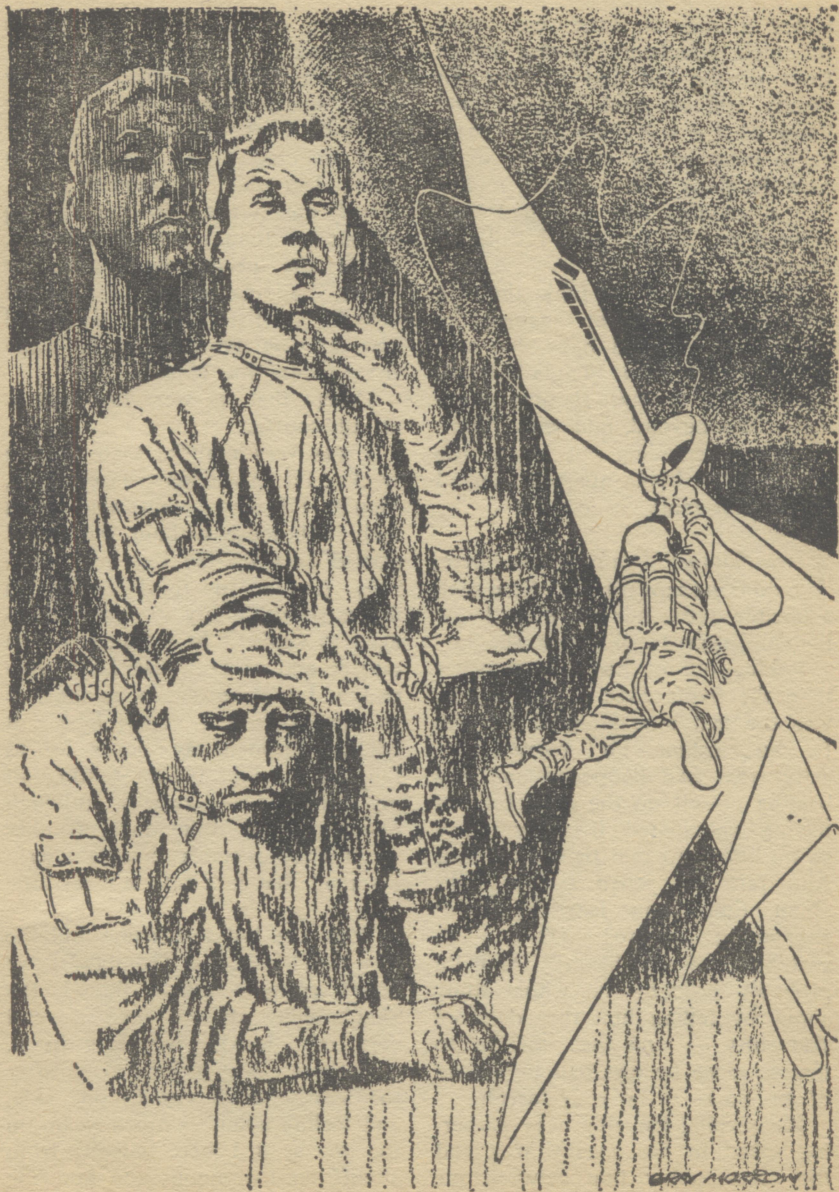
when he’d pause for Joseph’s reply I’d catch myself waiting for the imaginary me to make one. So I took to staying in the same cabin as Jeff as much as I could.

That seemed to make him uncomfortable after a while, though he pretended to glory in it. He’d ask me questions like, “Tell me about life, Joe. So I’ll know how to handle myself if we’re ever parted.”

But the weariest things come to an end, even duty orbits around Shaula. And so the time came when we were servicing our last beacon — outside the planet Shaula-by, it was. Next step would be a fast interplanetary orbit for Base at Shaula-near.

I was out working — on a safety line of course, but suit-jetting around more than I needed to, just for the pure joy of it, so that my suit tank was almost dry. I’d switched my suit radio off for a bit, because, working in space, Jeff had taken to just gabbling to me nervously all the time — maybe because he figured there couldn’t be room for Joseph with him in his suit.

I finished up and paused for a last look at the ship. She was sweetly slim from her conical living quarters to the taper-tail of her ionic jet, but she had more junk on her than an amateur asteroid prospector hangs on his suit the first time out. Every duty orbit, fifty scientists come with permission from the Commandant to hang some automatic research gadget on the hull. The craziest one this time was a huge flattened band of gold-



plated aluminum, little more than foil-thick, attached crosswise just in front of the tail and sticking out twenty feet on each side. I don't know what it was there for — maybe to measure the effects of space on a Moebius strip — but it looked like a wedding ring that had been stepped on. So Jeff and I called it Trompled Love.

But in spite of the junk, the ship looked mighty sweet against the saffron steppes and baby-blue seas of Shaula-by with Shaula herself, old Lambda Scorpii, flaming warm and wildly beyond, and with "United States" standing out big as life on the ship's living quarters. United States of Shaula, of course.

I was almost dreaming out there, thinking how it hadn't been such a terrible duty after all, when I saw the ship begin to slide past Shaula.

Poking out of her tail, ghostlier than the flame over a cafe royale, was the evil blue glow of her jet. In an instant I'd guessed exactly what had happened and was beating myself on the head for not having anticipated it. Joseph had swum into the cabin right after Jeff. And Jeff had yelled at him, "It's about time, you lazy lunkhead! Everything secure? Okay, I'm switching on the beam!" And I'd probably brought the whole thing about by telling him that damfool sled story — and then sticking to him so close he just had to get rid of me, so as to be with Joseph.

Meanwhile the ship was gathering speed in her sneaky way and the wavy safety line between me

and the airlock was starting to straighten.

As you know, an ionic jet's only good space-to-space. It's not for heavy-G work; ours could deliver only one-half G at max and was doing less than one-quarter now. Which meant the ship was starting off slower than most ground cars.

But the beam would fire for hours, building up to a terminal velocity of fifteen miles a second and carrying the ship far, far away from lonely Joe Hansen.

Except that we were tied together, of course.

I was very grateful then for the weeks I'd practiced space-roping, though I'd never won any prizes with it, because without thinking I started to whip my line very carefully. And on the third try, just as it was getting pretty straight, I managed to settle it in a notch in one outside end of Trompled Love. After that I took up strain on the line as gradually as I could, letting it friction through my gloves for as long as I could before putting all my mass on it — because although one-quarter G isn't much, it piles up in a few seconds to quite a jerk. I spread that jerk into several little ones.

Well, the last jerk came and the line didn't part and Trompled Love didn't crumple much, though the Shaula-light showed me several very nasty-looking wrinkles in it. And there I was trailing along after the ship, though out to one side, and feeling about as much strain on the line as if I were hanging from a cliff on the moon, and knowing

I was going about five feet a second faster every second.

My idea wanting to be out to the side (and bless my impulses for realizing it, was the one important thing!) was to keep my line and myself out of the beam. An ionic jet doesn't look hot from the side. But from straight on it's a lot brighter than an arc light — it's almost as tight as a laser beam — and I didn't want to think about what it would do to me, even trailing as I was a hundred yards aft.

Though of course long before it had ruined me, it would have distinguished my line.

My being out to the side was putting the ship off balance on its jet and presumably throwing its course toward base and Shaula-near little by little into error. But that was the least of my worries, believe me.

I thought for a bit and remembered I could talk to Jeff over my suit radio. I decided to try it, not without misgivings.

I tongued it on and said, "Jeff. Oh, Jeff. I'm out here. You forgot me."

I was going to say some more, but just then he broke in, angry and so loud it made my helmet ring, with, "Joseph! Did you hear anything then?" A pause, then, "Well, clean the wax out of your ears, stupid, because I did! I think we got an enemy out there!"

Another and longer pause, while my blood curdled a bit thicker, then, "Well, okay, Joseph, I'll go along with you this time. But if I hear the enemy once more, I'm go-

ing to suit up and take a rifle and sit in the airlock door until I've potted him."

I tongued the radio off quick, fearful I'd sneeze or something. I had only one faint consolation: Joseph seemed to be a bit on my side, or maybe he was just lazy.

I thought some more, a mite frantic-like now, and after a while I said to myself, *Been going five minutes now, so I'm doing about a quarter of a mile a second — that's fifteen miles a minute, wow! — but out here velocities are purely relative. My suit does a little better than a quarter G full on. Okay. I'll jet to the ship.*

No sooner said than acted on — I was beginning to rely too much on impulse now. The suit jet killed my false weight at once and I was off, mighty careful to aim myself along my line or a little outside it, so as not to wander over into the beam.

Pretty soon the tail and Trompled Love were getting noticeably bigger.

Then a lot bigger.

Then my suit fuel ran out.

I'd built up enough velocity so that I was still gaining on the ship for a few seconds. In fact, I almost made it. My gauntlet was about to close on Trompled Love when the ship started slowly to pull away. Oh, it was frustrating!

I remembered then what I should have a lot earlier, and grabbed for the ship-end of my line so as not to lose the distance I'd gained — and in my haste I knocked it away

from me. The only good thing was that I didn't knock it out of the notch.

Now I was losing space to the ship faster and faster. Yet all I could do was reel in the me-end of the line as fast as I could. Suddenly the whole line straightened and gave me a bigger jerk than I'd intended. I could see Trompled Love crumple a little. And I was swinging just a bit, like a pendulum.

I used a glove-friction to spread the rest of the jerk, but still I was at the end of my line and Trompled Love had crumpled a bit more before I was coasting along with the ship again.

My side of Trompled Love was bent back maybe twenty degrees. The eye of the beam shone at me from the tail like a pale blue moon. For quite a while it brightened and dimmed as I tick-tock swung.

Meanwhile I was beating my skull for not having thought earlier of the obvious slow-but-safe way of doing it, instead of that lunatic suit-jetting. I once heard a psychologist say we're mental slaves to power-machinery and I guess he had something.

Clearly all I had to do was climb hand-over-hand up the line to the ship. At moon gravity that would be easy. If I should get tired I only had to clamp on and rest.

So I waited for my emotions to settle a bit, and then I reached along the line and gave a smooth, medium-strength heave.

Maybe there is something to ESP — at least in a devilish sort of way — because I picked the exact mo-

ment when Jeff decided to feed the beam more juice.

There was a *big* jerk and I saw Trompled Love crumple a lot, so that it was pointing more than forty-five degrees aft.

Now there was a steady pull on the line like I was hanging from a cliff on Mars. And the eye of the beam was a blue moon not so pale — in fact more like a sizzling blue sun seen through a light fog.

After that I just didn't have the heart to try the climb again. Once I started to draw myself up, very cautious, but on the first handhold I seemed to feel along the line Trompled Love crumpling some more and I quit for good.

I figured that at this boost Jeff would be up to proper speed for Shaula-near in less than two hours. Well, I had suit-oxy and refrigeration for longer than that.

Of course if Jeff decided not to cut the beam on schedule, maybe with the idea of eloping with Joseph to the next solar system — well, I'd discover then whether suit-oxy running out would stimulate me to try the climb again alongside the beam.

(Or I could wait until he got her up near the speed of light, when by the General Theory of Relativity the line ought to be shortened enough so that I could hop aboard if I were sudden enough about it. . . *No, Joe Hansen, you quit that*, I told myself, *you don't want to die with the gears in your head all stripped.*)

Thinking about the beam got me wondering exactly how close I was to it. I unshipped my suit-antenna

and pulled it out to full length — about eight feet — and fished around with it in the direction of the beam.

Nothing seemed to happen to it. It didn't glow or anything; but I suddenly got a little electric shock, and when I drew it back I could see three inches of the tip were gone and the next couple inches were pitted. So much for curiosity.

Next I reattached the antenna to my suit — which turned out to be a lot more troublesome job than unshipping it — and tongued on the radio with the idea of listening in on Jeff.

Right away I heard him say, "Wake up, Joseph! I'm going to tell you your faults again. I got a new way of cataloguing them — chronologically. Begin with childhood. You hitched sled-rides on airplanes. That was bad, Joseph, that was against the law. If the man had caught you doing it, if he'd seen you whizzing along there back of him, he'd have had every right to shoot you down in cold blood. Life is hard, Joseph, life is merciless. . ."

Right then I felt a tickle in my throat.

I tried quick to shut off the radio, but it is remarkably difficult to tongue anything when you have a cough coming. It came out finally in a series of squeaky glubs.

"Snap to, Joseph, and listen hard," I heard Jeff say. "It's started again. Animal noises this time. You know if they make spacesuits for black panthers, Joseph?"

I tongued off the radio quick, before the follow-up cough came.

I didn't have anything left to do now but think. So I thought about Jeff — how there seemed to be one Jeff who hated my guts and another Jeff who idolized me and another Jeff sneaking around in a jungle of sabertooth tigers and . . . heck, there was probably a good twenty Jeffs sitting around inside his skull, some in light, some in darkness, but all of them watching each other and arguing together all the time. It was an odd way to think of a personality — a sort of perpetual *Kaffeeklatsch* — but it had its points. Maybe some of the little guys weren't Jeffs at all, but his father and mother and a cave-man ancestor or two and maybe some great-great-grandchild butting in now and then from the future. . .

Well, I saw that speculation was getting out of hand so, taking a tip from Jeff, I began to count my own sins.

It took quite a while. Some of them were pretty interesting reading, almost enough to take my mind off my predicament, but I tired of it finally.

Then I began to count the stars.

It was really the longest two hours plus I ever spent, except maybe the time my first big girl disappeared. But I don't know. The experiences are hard to compare.

I was about halfway through the stars when I went weightless. For an awful instant I thought the line had parted at last, but then I looked toward the ship and saw the bright little moon was gone.

Right away I gave a couple of tugs on the line and began to close slowly with the tail. No trouble at all — actually my only difficulty was resisting the temptation to build up more momentum, which would have resulted in a crash landing.

I softened-in on Trompled Love okay, except there was a big spark. The beam must have charged me good. Then I worked my way to the true hull. After that there were handholds.

Finally I got to a porthole in the living quarters, and I looked in, and there was Jeff jawing away at my empty seat. I put my helmet against the hull and very faintly I heard him say, "Joseph, I'm still worried about the enemy. I keep thinking I hear him or it. I'm going to make us some coffee, so we'll stay real alert. You break out the guns."

I don't suppose anyone ever moved quite so quietly *and* so quickly in a spacesuit as I did then. I got in the airlock, I got her up to pressure, I got unsuited — and all in less than five minutes, I'm sure. Maybe less than four.

I swam to the cabin. It was empty. I slid into my seat just as Jeff floated in with the coffee.

He went real pale when he spotted me. I saw there might be some trouble this time with the Joseph-Joe transition. But I knew the only way to play it was real cool. I nested there in my seat as if I hadn't a worry or urge in the world — though my nerves and throat were just screaming for a squirt of that coffee.

"Joe!" he squeaked at last. "Migod, you gave me an awful scare. I thought you'd done a bunk, I thought you'd spaced yourself, I kept picturing you outside the ship."

"Why no, Jeff," I answered quietly. "One way or another, I've been in this seat ever since take-off."

His brow wrinkled as he thought about that.

I looked at the board and noticed that our terminal trip-velocity read fifteen miles a second. My, my.

Finally Jeff said, "That's right, you have." And then, just a shade unhappily, "I might have known. You always tell the truth, Joe — you're perfect." END

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# TO THE STARS

BY J. T. McINTOSH

ILLUSTRATED BY WOOD

**To conquer space takes more  
than dreaming. It requires  
courage — and ruthlessness!**

## I

Charles Faulkner stood up, stretching himself to his full five feet three. "Of all times to have to go to Rigel," he sighed, "this is without exception my most unfavorable."

"You mean because you'll miss Bernice's wedding?" said his secretary sympathetically. "But you do have to go, C.F. Sending anybody short of the vice president and you has failed, so—"

"So why not send the vice president?" Faulkner said with a sardon-

ic glance at her, daring her to be rude about Percy Gordon, the vice president of Faulkner Lines.

"So you have to go," said Susie decisively.

Faulkner looked out of the window. From the top of the Faulkner Lines Building, twenty-three floors high, it was possible, smog permitting, to see clear across the city to the spaceport. Today smog didn't permit. It was curious that mankind could now reach any place in his own galaxy, and was beginning to think about reaching others, and still hadn't beaten the smog. Any



ignorant savage would think it was easier to banish the smog than invent super-light-speed space travel to get away from it . . . thus proving, of course, that he was an ignorant savage.

"I'm not so sure," Faulkner murmured. "Percy has no imagination, sure. But that's why he's so useful. He goes all the way round his elbow to reach his thumb, but he always reaches his thumb. Revising the Rigel schedules ought to be a routine job. I'm not sure Percy isn't exactly the right man to handle it."

Susie stayed significantly silent. Faulkner Lines was still a one-man empire. All the big decisions were made by nobody else but Charles Faulkner, who was generally capable of making them without turning a hair. Susie's approval when he was right and disapproval when he was wrong didn't have to bother him. But being a very good secretary, she liked to keep it that way — approval when he was right and disapproval when he was wrong. She wasn't going to start approving just because he wanted some excuse, any excuse, to do what he wanted to do instead of what he knew he had to do.

Apparently Faulkner accepted the verdict. "Okay," he said, "I'm going to Rigel." He shot another sardonic glance at her. "Keep things running my way while I'm gone, but don't let Percy know that's what you're doing."

"Tell me one thing. If anybody asks why you're traveling by Transgalaxy instead of Faulkner Lines, what do I say?"

Faulkner's eyes narrowed. "Say there isn't a Persephone flight for six months."

"Sure, but a Persephone left a week ago. Suppose somebody asks why you weren't on that?"

"I was busy. I couldn't go till now, and had to book by Transgalaxy. That's all you know, and it's all there is to know."

Susie nodded. "One other thing. A man has been trying to see you. Some kind of crank is my guess. No sane man would be that insistent."

"Wouldn't give any reason? Wouldn't talk to anybody but me?"

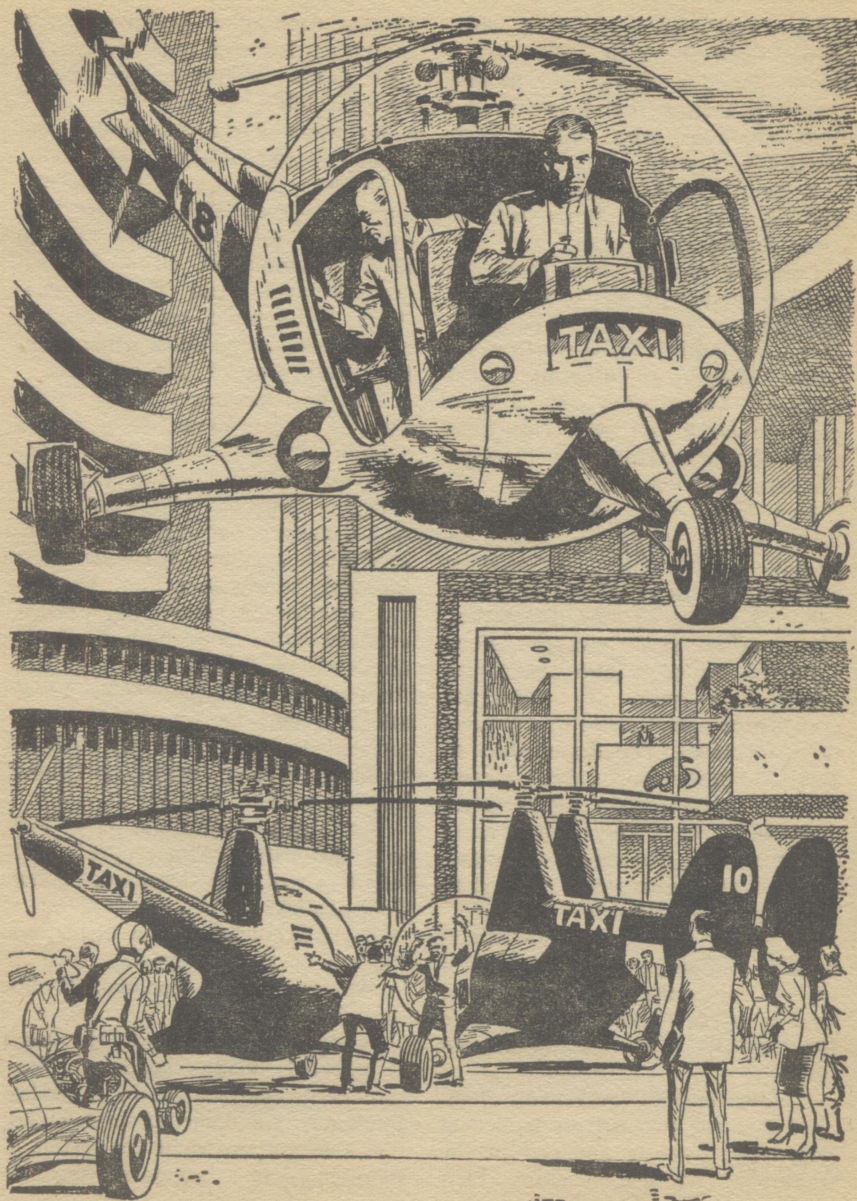
"No."

He nodded. "I know the type. Go on keeping him out of my hair. Well, Susie, keep your nose clean while I'm gone — and Percy's too, if you can."

She said nothing. Although Faulkner could say what he liked about Percy Gordon, Susie never allowed herself any liberties. Theoretically the vice president was far more important than the boss's private secretary. But only in theory.

Faulkner made the descent in his private elevator. On the ground floor he had a choice of three exits, two quiet ones and the other through the main foyer. He chose the last because he wanted to pick up the heli cab.

Nobody noticed him so he crossed the huge deep-carpeted hall with its central model of the galaxy. Nobody noticed him, by order. Long ago, when he found he couldn't cross the foyer without causing first



a hush and then a rustle of whispering from the men and girls in the booths all round the hall, he had sent out a staff notice saying the first employee who noticed him would be fired.

It hadn't been necessary to fire anybody. Charles Faulkner had become the Invisible Man.

Certainly nobody other than employees would be likely to notice him. Charles Faulkner, of Faulkner Lines, was known to be worth more millions than he could count. And it was well known that such a man must be eight feet tall. This little squir. couldn't possibly be the great Charles Faulkner.

Outside the huge swing doors — there were twelve of them — Faulkner went to the landing area and stopped there. From the helicab rank on top of the supermarket, two hundred yards away, a green cab rose to pick him up. Cities didn't have space any more for even helicabs to wait in handy positions for fares. The drivers had to park in otherwise useless places, like the flat top of the supermarket, and watch the small landing areas for intending passengers. A maximum of one minute was allowed to land and pick up a fare.

It wasn't the green cab which picked up Faulkner after all. As it rose to make the short hop to the landing area, another helicab rose too quickly. The rotors touched briefly.

Neither machine was badly damaged, but the two drivers landed at once and instantly engaged in the traditional wrangle, shaking their

fists at each other and completely forgetting for the time being that such things as fare-paying passengers existed.

Meantime a red cab landed and Faulkner was whisked away.

He was thinking of the helicab accident. Levels of flight were now rigidly controlled, but there was one level common to all flights — ground level. And helicab accidents, frequent if seldom serious, naturally occurred most often within twenty feet of the ground.

Idly he considered the possibilities of a cab tower — a simple column consisting of little more than an interior elevator, with perhaps a hundred platforms from which cabs could pick up passengers. Such a system could be made far safer, he was sure, than the present practice of picking up passengers invariably from the ground. He didn't follow the idea out very far, for Faulkner Lines needed his whole attention and he wasn't really interested in going into the helicab business. Still, it might be worth making a few inquiries.

Suddenly he started. He had told the cabbie "Spaceport," and left it at that. But there were green fields below.

There were no green fields on the way to the spaceport.

"Spaceport," he repeated. "I did say—"

"I know what you said," the driver retorted, turning his head. "Before we go any further, Mr. Charles Faulkner, you'd better understand that I've got my right thumb on a thumblock. If it comes off the en-

gine stops. Is that clear, Mr. Charles Faulkner?"

"Perfectly clear," said Faulkner coolly, although he was mentally flaying himself. That business of the cabs should have alerted him. The first cab in the rank had been deliberately put out of action by an accomplice of this man. Then the driver of the red cab dropped in the landing area from God-knows-where and Charles Faulkner, like any ordinary idiot, unsuspectingly stepped inside.

"It's ransom you're after, I guess?" Faulkner went on. "It'll be difficult to collect. Nobody in the company can handle big money except me."

"It isn't ransom," said the driver. Like Faulkner, he was a very small man. His eyes were sharp and black, his face eager, alert, suspicious. And there was something else in it. Faulkner had never seen such greed in a human face before. Greed lit it from within like a beacon.

*I'll pay him, Faulkner thought contemptuously. I'll pay him what he wants and not even set the cops on him. Whatever I give him will only help to destroy him. A man like that can never have enough. He'll go on grasping until one day he grasps a rattlesnake.*

"Do you have a name?" Faulkner asked.

"You can call me Smith."

"What do you want, Smith?"

"First I'll tell you what I have to sell. I know about the Persephone, Faulkner."

Faulkner didn't allow his face to register even mild surprise or interest. "I should hope so," he said. "Faulkner Lines is built on the Persephone ship. Naturally I hope everybody knows about her. Even you."

"Very funny," Smith sneered. "And a good coverup, if I was only guessing. But I'm not guessing. I know. The Persephone is a lemon, Faulkner, and you know it. She's a dangerous ship, a ship with bugs in her, and you and your technicians not only know that, you know what the bugs are and you still can't get them out. Meantime, dangerous or not, you're running Persephones all over the galaxy and making millions doing it because she's faster than any other ship."

"You're right about one thing. The Persephone is fast."

"And I'm right about all the rest too. How do I know it? I've overheard visiphone conversations between you and your technical boss, Tom Breck. He's the man who designed the Persephone — and even he says she stinks!"

"It would be interesting to know how you tapped the line," Faulkner mused. "But not really important. Have you any proof?"

"Recordings of the conversations."

Faulkner smiled slightly. "You fail to disturb me. I said, have you any proof?"

"I know that five of the Persephones you supplied to the Navy have blown up. And three of your spaceliners disappeared with over two hundred passengers."

The helicab hovered motionless over a field of corn. This must, of course, be the man who had been trying to see Faulkner, who would speak to no one else. It was pretty difficult, Faulkner admitted, to get near him. In future he'd make it even more difficult.

"You know that — and so does everybody else. It's no secret. Nobody can run a spaceline, any more than an airline, without an occasional accident."

"But you're using a dud ship. You can't afford to be investigated. One hint of this and Faulkner Lines is finished."

It was true, Faulkner reflected, that such accusations could be damaging, whether well founded or not. The smear campaign had always been a deadly weapon. It would be best to buy this man off, if that was possible. But he'd have to be sure Smith stayed bought. Worse than anything Smith could say now would be the disclosure that Charles Faulkner had tried to silence him.

"Suppose I tell Information Inc. that you're running a spaceline based on a ship that you know is a killer?" Smith sneered. "That instead of withdrawing the Persephone until you can make her safe, you're building more and more ships and risking the lives of thousands of passengers every week?"

"Suppose you do?" said Faulkner, temporizing. It would be stupid to point out to Smith the weakness of his position. It was possible, after all, that Smith didn't know it.

News, not morality, was the business of Information Inc., that vast clearing-house for all the news of the galaxy, whether of feast, flood, famine or felony, scare or scandal, society or science. Since what mattered was collecting information, not the motives of those who supplied it, II accepted anonymous calls on X (untraceable) lines, and without doubt Smith intended to take advantage of this dubious privilege.

Faulkner was aware, however, as perhaps Smith was not, that the police department had recently won a long, hard battle and that X calls which concerned murder and blackmail "but nothing else" were now instantly transferred to A-G lines — and traced.

If before Smith called Information Inc. Faulkner had alerted the police, Smith would be putting his head into a noose. Like most blackmailers, Smith had to gamble that Faulkner would be too scared to call his bluff.

"You're hoping that some day before you're found out," Smith went on, "you'll be able to say you've found a flaw in the Persephone and fixed it. But the truth is, you know all about it and you've always known. You're a murderer, Mr. Charles Faulkner. You've already murdered three hundred Navy men and more than two hundred Faulkner Lines passengers. And you're going to go on murdering until the poor suckers who book passages in your ships find out the truth!"

Faulkner looked thoughtfully at

the man in the driver's seat. The force of the metaphor struck him. Was Smith really the man in the driver's seat? Was what he knew or guessed or imagined as important as he thought? If it were revealed, would an angry mob stone the Faulkner Lines building and tear Charles Faulkner limb from limb?

If there was no doubt of this, Faulkner would have to pay Smith, no matter what he asked. But was anything ever beyond doubt?

"Despite your righteous concern over this appalling situation," Faulkner said slowly, "you could be persuaded to stay silent for a small sum?"

"No," Smith said. "A very large sum. A very large sum indeed. In fact, twenty million dollars."

Faulkner affected amusement. "At least nobody could accuse you of modesty."

"Twenty million, I said."

"I heard you. Suppose, merely to avoid inconvenience to Faulkner Lines, I offered you ... say ... twenty thousand?"

"Drop dead."

"I'd pay you \$20,000," Faulkner mused. "It wouldn't do you any good, of course. A drop in the bucket to a man as avaricious as you. Still, it would help you fulfill your destiny — which is to ask for too much and get kicked to death in some dark alley."

"Don't you try anything on me, Faulkner. I can look after myself."

"So you think. You said 20,000,000? I said 20,000. Twenty thousand is my limit."

"And twenty million is mine."

"I really believe you mean it. Suppose I offered ten million?"

"If you offer ten million you'll pay twenty."

"True. If I offered ten million, I guess I *would* pay twenty. But I don't. It's 20,000 or nothing."

There was silence until Faulkner himself broke it. "You'll never be a successful blackmailer, Smith. You don't know the first rule, which is never to be too greedy. All information has a value, great or small. The concealment of certain information, or even certain conjecture, can also have a value. Ask around the right figure and you get it. Ask too much and you get nothing. Nobody but a fool pays too much for anything."

"If I don't get 20,000,000 I turn all I know over to the newspapers!"

"You don't get more than twenty thousand."

Smith was angry. He sensed defeat. Faulkner didn't talk like a man who had any intention of weakening. He talked like a man who would pay out a relatively small sum like twenty grand to avoid a certain amount of difficulty and embarrassment, but who would not under any circumstances allow himself to be bled.

Smith made a last effort. "This will break Faulkner Lines, and you know it. It's crazy to be so stubborn you won't pay out twenty million to save something worth billions!"

"It's even more crazy to take nothing when you could have twenty grand."

Rather to Faulkner's surprise, Smith turned the helicab and sent it skimming back to the city.

"You might as well take me back to the FL Building," Faulkner said. "I admit this much. You can hurt Faulkner Lines enough so I'll have to stick around to deal with the situation instead of going to Rigel."

Smith didn't answer immediately. Then he said: "I'm going to call you in an hour. If you haven't changed your mind, Information, Inc., gets all I know."

"Fine," said Faulkner comfortably. "Know something? I didn't really want to go to Rigel anyway."

The vicious way Smith set down the red cab showed the trend of his thoughts. And he barely allowed Faulkner time to step out before flinging the helicab skyward again.

It would be a waste of time trying to trace it, Faulkner decided. Smith would have ditched it before he could reach a phone.

## II

Susie stared as Faulkner returned. "Shoot Percy off to Rigel," he said curtly. "Don't let him argue. He'll have to bolt like a rabbit to catch that ship."

Susie took the hint and didn't argue either. She left the office without a word and was back within five minutes. Faulkner was sitting at his desk, mentally checking everything he was going to say and do.

"He's on his way," Susie said. "What's come up?"

"Blackmail. Somebody wants

twenty million dollars not to tell II that the Persephone is a hot ship."

Susie whistled. "What has he got?"

"Recordings of conversations between me and Tom Breck. Not enough to prove anything. Enough to raise a doubt in a lot of people's minds."

"Then this could be serious?"

"Easily."

"There's nothing in it, is there?"

"Your first job is to draw up detailed accident figures on the Persephone, the Blue Hunter, the Silverstream and a few other current deep-spaceship types. I think they'll prove there's nothing in it."

"Okay. What are you going to do?"

"Contact the police."

Susie visibly relaxed. "Then you've nothing to hide."

"Susie, the last thing that matters in a case like this is the truth. What people think is always a lot more important than the truth. And often a lot tougher to handle."

She frowned at him for a moment, doubtful again. But she didn't waste any more time before getting started on the job he had given her.

Susie Raglin had been Faulkner's secretary since she was a well-stacked twenty-two. In those days, of course, she had been an assistant secretary, not yet Faulkner's right-hand woman. Once or twice she and Faulkner had experimented with a relationship which wasn't entirely business, and not entirely platonic. This had been before Faulkner's wife died but after she became a helpless invalid. The brief

intimacy had brought them both some pleasure and no tears. When it ended they were friends and business associates, tied together by everything short of love.

Now Susie was forty-one and prematurely shapeless. The last time she had taken any exercise had been in her teens. She still had an attractive face, however; it had never gone hard and coldly efficient like the faces of so many women who put business before pleasure.

In the nineteen years she had been with Faulkner — sixteen of them as his confidential secretary — she had become, as so many women secretaries do, absolutely invaluable to him. That the company had grown, in those nineteen years, from a merely interplanetary freight transporter using slow, antediluvian rocket-ships of an intragalactic passenger service which, if not yet the biggest, was the most feared by all the other big companies, was due in very large measure to Susie Raglin.

Women probably never would get equality in business, partly because women never trusted women and men sometimes trusted men, partly because women didn't really want equality. In the year 2257 A.D. their position was certainly very different from what it had been in 1857 and in 1907, but not very different from their economic status in 1957. What women really wanted was happiness and security, and they didn't find these things in achieving sole control of large businesses. Neither did men, for that matter. But men took to the na-

tural dichotomy of business life and family life better than women.

Susie could probably have been vice president of Faulkner Lines instead of Percy Gordon if that had been what she wanted. It wasn't. She had what she wanted, short of meeting the man for whom she would have given up everything. That would never happen now. Her only child was Faulkner Lines.

They worked calmly together in the same office, Charles Faulkner and Susie Raglin, taking the crisis seriously but assuming that there was a way to handle it and that they would find it.

Faulkner called the police by visiphone and explained the situation. A blackmailer who called himself Smith would phone Faulkner's office shortly, probably on an X line. The cops would be able to listen but not to trace the call. That didn't matter — not if Smith then called Information Inc., where even X calls could be quietly switched to open lines.

After the call to II, if Smith went through with it, the cops would pounce. There would then be quite enough evidence to put him out of the way until he had a long gray beard.

But that didn't mean that Faulkner wouldn't have a job on his hand afterwards. Nobody liked blackmailers and there was a general tendency to protect the victim, especially a courageous victim. Such an accusation about such a business colossus as Faulkner Lines, however, was news. And II, which



was more interested in the facts than the source even in blackmail cases, was constitutionally incapable of sitting on such stories. II would be curious. II would want to know all about it. And if II wasn't told the facts, it would guess.

And what II knew one moment, the whole world knew as soon as it took in the next newscast, teleprint or flash recording.

Having alerted the police, Faulkner phoned Tom Breck, who was at the Persephone machine shop. Briefly he explained the position and went on:

"Tom, I guess it would be best if you don't talk to anybody."

Susie looked up at this.

"Yes," said Breck quietly.

"If any reporters want your end of the story, you say nothing beyond 'no comment.'"

"Yes."

"I'm going to tell them the truth, Tom, or as much of the truth as they'll understand."

"Yes."

"And I'm not coming to see you for a while. I'm not even going to phone you. We're old friends, Tom, and I know you. I know if you painted the Mona Lisa you'd frown at her, dissatisfied, and say she wasn't very well drawn. But people who don't know you are liable to think you mean what you say."

"I always mean what I say."

"Sure. You spend all your life working on the Persephone and then say she's no good!"

Since Breck appeared to have nothing to say to this, Faulkner cut the conversation.

Catching Susie's eye, Faulkner said: "Susie, we just can't afford to have Tom Breck in on this. It was his chronic self-doubts that started this business. I don't know exactly what Smith's got, but I know it must be something Tom said, not what I said."

Susie nodded.

Smith made his call on time. Faulkner took the call in Susie's presence, but without letting him see her.

Perhaps Smith believed that Faulkner wouldn't let anyone listen in on such a potentially dangerous conversation. And perhaps by now he was so disappointed he was past caring, seeing his dreams of enormous, easy wealth going up in smoke.

Smith was still demanding twenty million, no less, and he had nothing more to say than he had said in the helicab. He said it all again, even more angrily than before.

Faulkner did not repeat his offer of twenty thousand.

When Smith furiously broke the connection, snarling as a parting shot that Faulkner had just cut his own throat, Susie came over and laid a single sheet in front of Faulkner.

"Is that what you want?" she said. "You were right, C.F. In hours of operation and light-years traveled, these figures show the Persephone is as safe as any ship. Of course, since she's faster than all the other deep-space types, the hours of operation ratio to lives lost isn't as good as the distance-traveled ratio.

The space-only figures show the Silverstream up as safer than the Persephone, but—”

“Take them out,” Faulkner said. “The Silverstream lands, the Persephone doesn’t. Naturally a lot of the Silverstream’s accidents happen on landing and takeoff. To give a true comparison, you’d have to include *all* Silverstream accidents in the record, and include in the Persephone figures any accidents on tenders transporting passengers from planets to orbiting ships.”

“I was going to say,” Susie observed patiently, “that when you count in accidents on tenders, the Persephone becomes much safer than the Silverstream in light-years traveled per passenger lost, because there are hardly ever any accidents on tenders.”

Faulkner nodded. “That’s about what I thought.”

“Do you want me to include figures for *all* technical mishaps on Persephone flights, not just those leading to loss of life?”

“No, certainly not. Because of her type, the Persephone has more of those than any other ship. Why ask for trouble?”

“But if we’ve nothing to hide—”

“Susie, we’re not preparing these figures for experts who would take it for granted that a non-rigid ship operating on the integral-drive system must have more minor structural failures than a rigid pile-driven ship designed for planetside landing. We’re preparing them to be shown, if necessary, to the man in the street. All we want is the record involving injury and death.”

He paused. “Besides,” he added in a different tone, “other spacelines don’t reveal comparable figures, so why should we?”

“I just thought if we’re really satisfied that—”

There was a click behind them. They both turned, shocked and incredulous that anybody should have been able to get into Faulkner’s private office unannounced.

Then they relaxed. It was Bernice.

“I heard you didn’t leave on the Rigel ship, pop,” she said. “I’m glad. If you hadn’t been at my wedding I’d have felt practically illegitimate.”

She ran lightly to them and they kissed affectionately.

That it should be a highly charged emotional moment was natural. Bernice was getting married to Sam Endel on Saturday and leaving with him for Bascom III on the following Monday. Sam’s firm, United Plastics, were sending him to take charge of a new branch on Bascom III. If Charles Faulkner had left for Rigel, it must have been many years before he saw his daughter again, if ever.

He would be lucky if he ever saw his grandchildren.

**I**nterplanetary space travel was taken almost as lightly as crossing the street, but the long hauls half across the galaxy were risky and, most of all, expensive. Since the pioneering spirit in man was by no means dead, colonies kept on being established. And colonies established colonies, and the frontier of human dominion kept

on being pushed farther and farther out.

Until galactic travel was an accomplished fact, it had always been carelessly assumed that people would jaunt about the galaxy unrestricted by anything but the duration of the journey — which must be considerable, even at many multiples of the speed of light. Few people worked out what such flights would cost.

An extremely expensive ship with a highly trained, highly paid crew had to spend a very long time transporting a small number of people from one side of the galaxy to the other. The payload of any ship on any long trip was always reckoned in millions of dollars. A simple statement clearly showed why:

Cost of ship:	\$4,000,000
Life of ship: Three return cross-galaxy trips (average).	
Salaries (for life of ship on this basis):	\$3,000,000
Expenses (fuel, food, etc.):	
	\$1,500,000
Total:	\$8,500,000
Total number of cross-galaxy passages:	420
Cost of cross-galaxy passage before profit:	\$20,240
Cost to passenger:	\$25,000 up

And the actual cost of one of the longest journeys was liable to be considerably more than this, when insurance and taxes were included. Planets of arrival and departure could slap on travel taxes as they liked. Worlds which wanted to keep people out (which were few) im-

posed big landing taxes. Worlds which wanted to keep people in (which were many) imposed big taxes on outward fares.

The fact that Faulkner owned and ran a space-line made it more, not less, impossible for him to visit his daughter on such a distant world. Business men were no longer great travelers. Time was money, and space-travel was expensive both ways. The only people who could save anything on the deal were creative artists, who could paint, write or compose on the trip.

Bernice was a tiny brunette, small and slim enough to be taken for a child more often than she wished. Faulkner was only five-three himself. Bernice needed a moderately high heel to achieve five feet. Sometimes it was fun to be able to pass, at a casual glance, for fourteen or fifteen. But the joke had worn thin.

"How did you hear I'd stayed behind?" Faulkner asked.

"You know there are always newsmen at the spaceport. One of them phoned me and asked why you hadn't left. I couldn't tell him. Why didn't you leave? Feelings of paternal duty?"

"No, darling, though I was glad enough to stay. No, it was a business matter."

"What kind of business matter?" demanded Bernice, who had never been told that little girls should be seen and not heard.

"You'll know very soon."

And she did — for Smith didn't have the sense to make the best of a bad job and quietly disappear.



room

## III

Faulkner's office was quite big enough for a press conference. This one was fairly select. The newspapers knew they had to watch the legal angle when dealing with a colossus like Faulkner Lines — it was no use sending along reckless reporters who would listen with half an ear to what Faulkner cared to say and then dash off a towering denunciation of Faulkner's private and professional life, full of fire and fury and actionable inaccuracies.

What Smith had said to the newspapers was considered relatively unimportant and was not mentioned. What the conference was about was the tapes Smith had made of private conversations between Faulkner and Tom Breck.

Faulkner could of course have claimed invasion of privacy and tried to obtain interdict against disclosure of the content of the tapes. Instead he began by having the tapes played back in his presence, promising to state whether they were genuine or not, like any honest man with nothing to hide.

Bernice was still with him. Susie was engaged elsewhere.

The first tape began in mid-sentence. Although the quality was poor and the hum level high, all the words were clear enough.

Faulkner was speaking: "... nowhere near the Persephone's level of performance, Tom. Personally, I think the day of the planet-based spaceship is all but over. The Silverstreams and Blue Hunters that the

other companies use are obsolescent. Soon all ships will be assembled in space like the Persephone."

Tom Breck's quick, nervous voice answered: "Perhaps, Charlie. And perhaps the Persephone is a psychological flop, as I always thought it might be. Silverstreams land at spaceports . . . passengers step from solid ground into a great silver ship, live a comfortable one-G life for the next few months without ever having to look out into space and step out of their ship onto solid ground. Persephone passengers have to go up in a tender and make a weightless transfer to a great clumsy object that looks like a lot of old tin cans tied together. And there's an even more serious psychological disadvantage. Persephone passengers in deep space know they're on a ship which can never land, no matter what the emergency. They can't get down except on worlds equipped with suitable tenders."

"Tom, you let me worry about things like that. You designed the fastest ship in the galaxy, and to get all the advantages you did get you had to break right away from the conventional idea of a spaceship. It's up to me to educate the public into accepting the Persephone, and I'm doing it, slowly but surely. Every year more people who would have traveled by Silverstream or Blue Hunter are changing to Persephone—"

"They wouldn't if they knew what we know."

"Tom, for Pete's sake don't start on that again."

"I can't help it! I feel like a murderer, Charlie. At this moment, somewhere in the galaxy, it may be happening again. And I won't know about it for months."

"It's nothing to do with you, Tom — apart from your work on modifying and improving the design, that is. Hell, the owner of a shipyard doesn't feel guilty every time a ship he built sinks."

"No, but there's a flaw in the Persephone. I built it in with all the other..."

Just as the conversation reached its most vital point, the voices faded.

The nine reporters present, seven men and two women, who had been watching Faulkner closely, shuffled and coughed. The recording quality being poor, everybody had remained still and silent in order not to miss a word.

Benson of the *Today* program, a tall, thin, red-haired man with an abrupt, penetrating manner, shut off the playback for the moment.

"Is that conversation genuine, Mr. Faulkner?" he asked.

"Yes. It took place about two weeks ago."

"What was said after that?"

"We went back to talking about the psychological disadvantages of the Persephone design."

Benson suddenly barked with laughter. It was a loud, coarse sound. It said "in a pig's eye."

Faulkner had to ignore it. If a man called you a liar, you could insist on fighting him outside. If he merely laughed, you looked a fool if you tried to make a big thing out of it.

It was another reporter who asked the question they all wanted to ask; "What was the flaw Tom Breck talked about?"

"I understand there's more on that tape," Faulkner said. "Hadn't we better hear the rest first?"

Benson, at the machine, hesitated. It was obvious to everyone present that there was an opportunity here of trapping Faulkner. Not knowing the rest of what was on the tape, Faulkner, if he talked now, was liable to say more or less than he needed to say. He might be caught out in lies. On the other hand, he might admit more than the tape itself would show.

But the atmosphere was still polite. Faulkner was talking openly, or pretending to be open. Nobody wanted to antagonize him just yet.

So Benson brayed again, but started the machine.

The quality of sound was better this time. Faulkner's voice came through clearly: "Call in all Persephones? You know that's impossible, Tom."

"That's what I'd do." Breck's rather high, thin voice was stubborn now.

"Tom, there are thirty-seven Persephones spread right over the galaxy. More than half of them will never return to Earth. You know it takes years to replace our fleet throughout the service. It's taken us five years to build up an operational service of..."

That was all, a mere snatch of conversation. Soon, however, the same voices started again, so weak this time that Benson had to turn

up the volume. Some phrases were lost altogether in hiss and background noise.

It was now clear that Smith had not obtained these recordings by tapping wires at all. He had had a microphone hidden either at Faulkner's end — which Faulkner decided was out of the question — or at Tom Breck's. He must have done a lot of listening, and recorded only when he thought something important was going to be said. Alternatively, these were edited excerpts, the only significant sections from hours of useless material — useless from Smith's point of view.

Breck's voice came thinly: "Why? Listen. Integral drive is applied to 7,317 separate ... sixty per cent of the duration... We know that in every day of operation the chances are only ... that feedback won't develop in any particular unit. We're calling it feedback now because that's nearer what happens than fatigue. The unit in effect..."

After several seconds in which nothing at all could be distinguished, Faulkner's voice came through: "Who have you talked to about this, Tom?"

"Only you, Charlie. And it does no good, does it? You'll never call in all the Persephones. But of course you've too much sense ever to travel on them, haven't you, Charlie?"

After that last pregnant remark there was silence.

"That's all," said Benson, switching off the machine. "What do you want to say about it, Mr. Faulkner?"

"That it's very little to have

caused such a fuss. Smith was crazy if he thought I was going to pay twenty million for that."

"You mean there's more damaging things that he might have got but didn't?"

"Yes."

A couple of the reporters blinked.

Susie came in quietly. Faulkner, catching her eye, saw that what she had to say was favorable, and nodded his permission for her to say it to everybody.

"You might like to know," she said, "that the police have just arrested the blackmailer. His name's Arnold Steinberg, and he's a clerk at the Persephone factory."

"They're holding him on a blackmail charge?" Faulkner asked.

"Of course."

Bernice had been silent for a very long time, for her. "There's your source of information," she sniffed. "A clerk being held for blackmail. And I heard that tape. Let's all go home, huh?"

Benson looked her over thoughtfully. He was more than a foot taller than she was.

"There's something I'd like to ask you in a minute, Miss Faulkner. But first let's hear from your father. Maybe he'll tell us why Tom Breck isn't here to explain his side of what we just heard?"

Faulkner nodded. "I'll take that first. You must have got some idea of what Tom's like from that tape. He's a worrier. He's spent all his life worrying. Tom's fifty-seven, a little man like me, and he weighs exactly a hundred pounds. He never

married. He spends all his time working on the Persephone.

"Tom's been with me since the beginning. As well as being a designer, he's a top-notch engineer and mechanic. At first he helped to keep the old fleet we used to have running. But he always had a dream in his head, the Persephone. I can't say exactly when he designed her, because he'd been working on the idea since he was at college.

"To Tom, the ship had to be perfect. When at last we were able to build the first Persephone, seven years ago, you think he was happy? Not Tom. The trials exceeded my wildest hopes, but Tom was miserable. He had expected more."

The nine reporters listened silently, seeing the story fade away like butter in a hot pan. It could have been a big news story: *Charles Faulkner blackmailed — Persephone in a hot ship—Spaceline gambles with passengers' lives*. But their interest was lessening with every moment. The blackmailer was a two-bit clerk who didn't have the sense to know when a poor bluff had failed, and couldn't even handle things so that if he didn't get any money he'd at least stay out of jail. And the Persephone designer's doubts looked as if they arose simply out of chronic, characteristic self-doubt.

Faulkner was convincing because these hard, cynical men and women knew the truth when they heard it, which was seldom. They could check on what he said about Tom Breck, but few of them were going to bother.

Faulkner came easily to Breck's most damning remarks, what he had said on the last, badly-recorded snatch. First Faulkner filled in the gaps, not guaranteeing exact words but certain of the sense.

"The Persephone works on the integral-drive system," he said. "That means that instead of having power at front or rear driving a rigid ship, integral drive is applied to 7,317 separate components. Now, there is a certain danger in any integral-drive system. That's what Tom was worrying himself sick about. Metals to which integral drive is applied may eventually develop what we used to call fatigue, because it resembles vibration fatigue in that the metals become crystalline. When this happens, the unit concerned stops reacting to the integral-drive impulse and becomes neutral."

"And that means?" Benson prompted.

"Usually, it comes off."

"You mean pieces tear themselves off the ship?"

"Not quite. It would be more accurate to say that the ship tears itself away from the crystalline unit."

There was a stir of interest again. A man who had not previously spoken said drily: "This is what you meant when you said there were more damaging things that Steinberg might have got?"

"Yes. I'm being perfectly frank, gentlemen — ladies and gentlemen. When Tom designed the Persephone, the theoretical possibility of fatigue, or feedback as he now calls it, was known. It was, and is, one of



the inherent snags of integral drive. Please remember, however, that it occurs very seldom. Unlike metal fatigue, which shows up in set conditions at a predeterminable time, feedback may occur at any time in the life of a unit. Our tests have shown, however, that the maximum likelihood occurs somewhere around 300 days. In practice, we take it that if feedback's going to occur it doesn't generally happen while units are new. And if it hasn't happened after say 400 days of operation it's never going to — in other words, that unit is safe."

"But when ships are about 300 days old they're liable to blow up?" said Benson bluntly.

Faulkner laughed in protest. "Please . . . do you imagine anybody would run a spaceline like that? And if they did, can you imagine them frankly explaining it all?"

First of all, he said the critical figure was 300 days of integral-drive operation, not the age of the ship. This figure wasn't usually reached until a ship was over two years old. Secondly, since feedback was a known hazard, the Persephone was designed to cope with it.

"It's always been known," he said, "that if there's a hole in a rowboat it may fill with water and sink. It's accepted, too, that there are many ways in which a hole may be formed. But that isn't regarded as sufficient reason for not using rowboats.

"Persephones are so constructed that sections can be lost without impairing the safety or efficiency

of the ship as a whole. Moreover, integral drive is applied in rotation so that the various units reach and pass their critical point at different times."

Calmly he explained the system by which the risks attendant on feedback were reduced to a minimum. Several times he introduced parallels in other fields, and occasionally with other types of spaceship. He showed them Susie's safety figures. He answered every question with utter confidence. He offered to let them interview integral-drive experts and experienced Persephone crews. He showed them the Navy report on the Persephone.

And one by one the reporters closed their notebooks. There was no story here. An uninformed clerk — they all remembered that he was a clerk, not a technician — had listened in on talks between his boss and Faulkner Lines' chief designer and thought he had stumbled on something.

But he hadn't.

Spacetravel was obviously dangerous. Ships could be lost in many ways. And if a particular ship was more prone to one kind of risk, it was less prone to another. Persephones had a problem which Silverstreams hadn't. But then, Silverstreams had atomic-pile problems which couldn't happen on Persephones.

There was only one thing left. Benson brought it up at last. "You've never made any long-distance trip on a Persephone yourself, have you, Mr. Faulkner?" he asked.

"The occasion has never arisen."

"It could have arisen last week, when a Persephone left for Rigel."

"It was impossible for me to travel last week."

"Your daughter leaves for Bascom III in a few days' time. Her passage is booked in a Silverstream of Ace Transportation. Yet an FL Persephone leaves for Bascom II on Saturday, and takes three months less for the trip."

Bernice stepped forward. "My fiance Sam Edel is being sent to Bascom III by his company, United Plastics. You'll find if you check that they arranged all the details of our passage. We weren't consulted."

"Wouldn't it seem natural, Miss Faulkner, that you and your husband should travel by your father's spaceline?" Benson asked.

"It would. It did. Check with United Plastics. You'll find they have a long-term contract with Ace Transportation. Ace quotes special rates for them."

"Couldn't your father quote a special rate for his own daughter and son-in-law?"

"No doubt," said Bernice with quite remarkable patience, for her. "The point is that Ace Transportation carries all U.P. employees. Still, since the trip is our honeymoon, maybe we could arrange something special, at that. Sam could travel by Ace and I could go by Persephone."

There was a hard chuckle from the reporters.

And that was that. The meeting closed on a note almost of boredom.

Faulkner had won and Arnold

Steinberg had lost out. Steinberg would have been well advised to take the \$20,000 Faulkner had offered.

For as the meeting closed, everybody knew that nothing the newspapers represented were going to print would do Faulkner Lines much damage.

Susie found herself remembering what Faulkner had said before the reporters arrived: "Susie, the last thing that matters in a case like this is the truth. What people think is always a lot more important than the truth..."

#### IV

The wedding of Bernice Faulkner to Sam Endel was treated by the news services purely as a social occasion. The brief scare about the safety of the FL ships was not forgotten, but it was dead for all that.

Nobody had gotten anything out of Tom Breck. Every time a reporter managed to corner him, he said merely: "No comment."

Today screened a few interviews illustrating the effect or the Faulkner Lines bookings of the incident. Faulkner gave the actual figures freely. There were a few panic cancellations, and then a strange rush of new bookings. The only possible explanation was that some people regarded any publicity as good publicity.

And Arnold Steinberg was in jail. He never did mention that Faulkner had offered him \$20,000 and that he refused it. Perhaps, belated-

ly, he realized what a fool he'd been not to take it. Perhaps he even realized that if he said he'd been offered \$20,000 and had turned the offer down, nobody would believe him.

Bernice was a pretty bride although she couldn't flutter and blush, because she didn't know how. She looked so absurdly tiny and childlike that the color of her dress was a shock. It was neither white nor any of the neutral hues; although modestly knee-length, it was a shade of crimson which stated firmly that she and Sam were lovers already and didn't care who knew it. And when she said "I do," she and Sam exchanged glances and nearly burst out laughing, remembering a pre-marital discussion when it had been agreed that the correct answer should really be: "I did."

Charles Faulkner, as well-dressed as a man in his position was expected to be, was grave and gay by turns. Susie was with him, looking rather like the bride's mother.

As well as the ordinary cameras, an empathy camera was there, since public interest was high enough to make it worth while and none of the principals had refused to submit. Working clumsily but faithfully on the clues it recognized — heartbeat, body temperature, gland activity, brain patterns, all picked up from ten feet distance — it reported sentimentally that Sam loved Bernice and Bernice loved Sam, slobbering over the details, which were normal except that Bernice was having more fun than

most brides did out of this relatively early stage of the proceedings, the wedding ceremony. A prurient swoop on Faulkner and Susie yielded disappointingly negative results. They seemed to regard each other exactly as an employer and secretary should, and Sam and Bernice exactly as they should. For once, the rather rare opportunity to use an empathy camera, live, at a public ceremony failed to produce even a whiff of the scandalous, the secret or the abnormal.

None of the reporters and cameramen present, and there were plenty of them, had been at the press conference Faulkner had held when the good name of the Persephone was questioned. This was a different story, requiring entirely different treatment. This was a tear-jerker about the rich man who was losing his daughter and not gaining a son. Everybody knew how unlikely it was that Faulkner would ever see Bernice again.

Forty cameras watched as Faulkner kissed Bernice good-by at the church. He wouldn't see her again until perhaps their last good-by at the spaceport on Monday.

Although he was not as a rule particularly sensitive to atmosphere, and quite unsuperstitious, Faulkner found himself inexplicably reluctant to let her go. He felt, for no reason whatever, that he was never going to see her again at all.

Since there was no reason whatever, he forced himself to step back and watch her leave with Sam. A poker game, he thought, would take his mind off things.

He had himself flown to Mack's, where there was always a poker game in progress, even on a fine Saturday afternoon. He was sorry now that there was no reception after the wedding, where he could have watched Bernice laughing, dancing, getting slightly tipsy. And yet. . . Her every look, every glance, every thought would have been for Sam. There was heartbreak in that for a man who had always been as close to his daughter as Faulkner had been.

Sam was all right, a loose-limbed, good-natured oaf who, though seeming stupid, never seemed to have any difficulty in keeping up with Bernice or even getting slightly ahead of her. Which took some doing. But Sam wasn't good enough for Bernice. Nobody was.

Mack's was on the top floor of a high building. The stairway and elevators were regarded as emergency exits only. Card-players always arrived by helicar.

Faulkner remembered how he and Tom Breck used to play poker here together. But Tom, who had once been a brilliant player, gradually lost his flair. Instead of playing coolly and skilfully, he began to bet nervously, afraid to back the intricate, subtle, unconscious conclusions which are called hunches. Realizing what was happening, he stopped coming.

Nobody who didn't have immense confidence in himself could bluff well. And poker had evolved from bluff through double-bluff and triple-bluff to unstated multiples of bluff.

You had a little indicator with buttons that enabled you to show what you held after the draw. What you claimed could be a complete lie or the complete truth. You won by getting away with it and by telling successful lies—lies being the margin between the poor hand that eventually won and the good hand that lost. It was no longer possible to avoid the worst disasters by dropping out. Premium penalties were paid by all players, whether still in or not.

A small, thin, silent man called Fred was the big winner in the school Faulkner joined. On the first hand he claimed ten high and collected considerably because his hand *was* ten high and he scared out four hands better than his. Even Faulkner, whose hand was ace high, could have stopped him, although since Faulkner, who had a pair of fives, had claimed a straight his gain would have been considerably less.

Fred's silent, speculative glance at Faulkner showed that if Faulkner didn't know him, he knew Faulkner and was aware that he was supposed to be one of the best players in town. Beat me, his gaze challenged. Go on and beat me. I won't run away crying.

On the next deal Faulkner did collect — but not much, because he held a flush and claimed only two pairs. Underclaiming reduced winnings. Fred's glance became more contemptuously, tacitly challenging. Anyone could win peanuts and lose thousands. The essence of poker was to turn as many defeats

as possible into victory, and wring the last drop of blood from every victory.

Faulkner kept trying. But Fred had something which, on that day at least, the great Charles Faulkner couldn't grasp. Confidence. Concentration. The will to win. Fred was only a little man, a man Faulkner had never seen before and would never see again, yet at that place and that time he was the master.

For Faulkner was only half himself. And for some unaccountable reason it was thoughts of Tom Breck and not Bernice which cut all the top brilliance out of his play.

A little after six o'clock Mack himself came over and whispered in Faulkner's ear.

"There are reporters downstairs, Charlie, a whole gang of them," he said.

"Huh?"

"Want to see them? You know the house rule. Nobody gets in here but card-players. If you want to see them you'll have to go down to them. If you don't, I'll tell them—"

"I'll go down," Faulkner said.

Something had happened. Going down in the elevator, he didn't bother trying to imagine what. He felt curiously tired.

Benson was there. Benson and a horde of hard newsmen, a very different crowd from the suave society scribblers who had been at the wedding.

"Want to make a statement, Mr. Faulkner?" Benson said.

"About what?"

"You haven't heard? Tom Breck committed suicide this morning. I

thought you must know because. . ."

Weariness closed in on Faulkner. He had thought of this possibility and dismissed it. Tom Breck had often seemed the kind to find things too much for him and take the quick way out. But Tom was fifty-seven, and he'd never taken it. Tom had gotten into the habit of not committing suicide, Faulkner thought.

Something he hadn't quite heard dragged his attention away from Tom Breck. "What was that?" he demanded sharply.

The newsmen were all round him crowding him. They weren't antagonistic, just curious. They wanted to know, and they thought he had the answers. Apparently they had more answers than he had.

"Didn't you know that either? We thought. . ."

"You didn't put her up to it, then? You didn't get her to do it to offset the news about Tom Breck?"

"Was it her own idea, then?"

"But Ace Transportation said arrangements between spacelines were common and friendly, and that you'd agreed to—"

It was clear now.

Bernice had never doubted him. What he did must be right. Always. He couldn't be mixed up in anything shady.

When she had heard that Tom Breck had committed suicide, she realized the bad effect it was going to have on Faulkner Lines and thus on her father. Knowing that the one telling point against Faulkner's personal integrity was the fact that the Faulkner family didn't travel by

Persephone, she impulsively decided to put this right.

She talked Sam into doing what she wanted, which presented no difficulty whatever, and make an exception in her case. It was true that the spacelines found it convenient to cooperate with each other in small ways. Ace wouldn't flatly refuse a request which they would presume came from Charles Faulkner himself.

Faulkner glanced at his watch. Six-twenty. The Bascom III tender left at six o'clock, but in journeys of many months a few minutes' or hours' or even days' delay were neither here nor there, and if any passenger didn't turn up on time it was common to wait for him. It was quite possible that the ship hadn't left yet.

Without a word to the reporters, he turned and ran for the elevator. They shouted and started after him, but he reached the elevator and slid the door shut with a second to spare.

He could phone the spaceport and delay the departure of the tender. It would take time, however, to get through to someone important enough, convince him of his identity and that he wasn't drunk and get the ship held up. It would be at least as quick to fly to the spaceport himself.

His helicar stood waiting on the rooftop parking area. He had sent his driver home, intending to send for him later. Rather hesitantly he set the controls. It had been years since he had flown a helicar, and

in the meantime the controls had altered. He had to look up the code for the spaceport, and his fingers were clumsy as he pressed the appropriate buttons. The radio navigator gave him bearings and altitude.

It didn't specify any speed, which puzzled him.

The helicar lifted from the rooftop rather unevenly just as half a dozen reporters, headed by Benson, burst out into the sunshine.

Why Faulkner was puzzled that the radio navigator let him pick his own speed was because there were so many flights to and from the spaceport before and after any important takeoff that the airlines always had to be very strictly controlled. As he approached the spaceport, however, he began to guess what had happened. There were no crowds of helicars streaming away.

Just as captains of deep-space flights didn't particularly mind delay before a long trip, they didn't always wait exactly to the scheduled moment before blasting off. People didn't decide on the spur of the moment to go to the other end of the galaxy. Once the tender captain had all his charges on board, he'd take off.

By all appearances the Bascom III tender had left at least an hour ago. By this time the transfer would be complete and the Persephone would be out of orbit, en route for New Virginia.

Bernice was gone — and on a ship which was liable to blow up on the way.

For once it was convenient to be able to act like a despot. Almost any other man would have had to accept the situation. Faulkner didn't. There was something he could do.

The very latest in the line of Persephones, fresh from her trials, was destined for service in far space. She was supposed to reach her region of operation carrying a full load of passengers. But Falkner could change that. He decided that she'd go out to New Virginia and take over the Bascom III flight from there.

And he was going to New Virginia with her.

It was impossible to keep the press entirely in the dark. Learning that Faulkner was chasing his daughter, the press was naturally interested. The Bascom III Persephone made only one stop, at New Virginia, less than a tenth of the way to Bascom.

Faulkner told the newspapers that he had made up his mind he couldn't let Bernice go. He had to get her back somehow, even if he had to buy Sam Endel away from United Plastics and give him a job on Earth.

This story didn't satisfy Jim Blake, FL's oldest skipper, whom Faulkner had asked to take charge of this special flight.

"If you want me to beat the regular ship out to New Virginia, Mr. Faulkner," Blake said bluntly, "you'll have to tell me exactly what's going on."

Blake had been with Faulkner almost as long as Tom Breck had

been. And of course, he had known Breck well.

"I just want Bernice back," Faulkner said. "Can't you understand that, Captain?"

Blake knew Bernice too. "If Bernice has made up her mind," he said, "you're not going to get her back. She's going with Sam Endel to Bascom III. Nothing that you can do will change that."

Fully aware of this, Faulkner gave up. "Okay, Captain. Bernice won't change her mind. She'll go on to Bascom III. But in this Persephone, not the one she's on."

"What's the matter with the one she's on?"

"Nothing much. But I'd rather she went on this one."

"You'll have to tell me everything, C.F."

Faulkner paused for a moment. Then he said: "You lived in Persephones for years, Captain. What did you think of her as a ship?"

"She's a grand ship," Blake said, "but moody. We all felt it. Every one of us who flew in her."

"That's the truth," Faulkner said. "Moody. Only Tom Breck and I knew how moody. Nobody else knew the full results of Tom's tests."

Blake's clear blue eyes fixed on him sharply. "There really is a flaw in the Persephone, then?"

Faulkner sighed. "Tom and I were placed in a peculiar ethical position, Blake," he said. "You know how Tom reacted. He killed himself."

"But not you," said Blake pointedly.

"Are you angry that you were

sent out in a ship that had a secret?"

"Depends exactly what the secret is. Stop stalling."

"What I told the reporters was true as far as it went. You know, none better, that the ship sheds units through her working life, and that usually it isn't serious. You know, too, that it *can* be serious, on any trip, any time. What you don't know is that every Persephone has one danger voyage."

"Don't I?" said Blake grimly. "I can tell you the one I had. It was four years ago, Pallis to Earth."

Faulkner's eyes widened. "How did you know?"

"Hell, sailors have always been able to feel things like that. I knew if I got through that trip I'd be okay."

"You were right. The crisis point is around the 300th day of service, as I told the reporters. Every ship has to pass through this danger point. Afterwards, she's okay. It's impossible to run her crewless or empty because the exact moment is so uncertain. All we can be reasonably sure of is that it turns up on one particular long voyage. As it happens, Bernice's ship will hit hers between New Virginia and Bascom III."

"So you do gamble with the lives of passengers and crew," said Blake grimly.

Faulkner shrugged. "The ethical problem doesn't bother me. It's absolutely true that the Persephone's overall record shows her to be as safe as any other ship. There's no faking about that. I don't feel guilty talking to you now, Captain, be-

cause you ran no more risks on a Persephone than you'd have done on any other ship."

"Except on that one trip."

"Sure. But we're pretty careful with our crews, Captain. I still keep the disposition of captains, crews and ships entirely in my own hands. And everybody from captain to steward gets one trip like that, no more. I'm telling you again — in your career in Persephones you weren't in any more danger than in a Blue Hunter or a Silverstream."

He went on very quietly: "It's a pity anybody ever knew about that one danger moment in the life of a Persephone, Captain. But for Tom's tests, nobody would ever have known. Some Persephone accidents happen early, some late — enough to conceal from anybody but Tom himself that there's a crisis point and where it is. As it is . . . well, would anybody book for one of these more dangerous flights? Would a crew take the ship out? Everybody would be happy to go on any *other* Persephone trip, but—"

Blake nodded. "You'd have to withdraw ships after 300 days."

"We can't. It isn't economic. Besides, there's nothing safer in space than a Persephone that's past her crisis point. That two-bit chiseler Arnold Steinberg didn't know it, but he really had something. If the truth ever came out, I can't see how we could go on running Persephones. And if we couldn't, that would be the end of Faulkner Lines."

"So you're not going to tell any-



body — ever," said Blake evenly. "Passengers or officers or crew."

"Would you tell anyone—if you were me?"

Suddenly Blake grinned. "I guess I see it your way," he admitted. "If your one ambition in life is to live to be a hundred, you don't join a space service. Sure, the way you run things doesn't bother me. But I see why you don't tell everybody the whole truth. And, for that matter, why you don't want Bernice on one of those crisis trips. Just one thing. Who brings the other Persephone back?"

"Not us," said Faulkner. "Some captain and crew who've never had a danger flight on the Persephone will do it."

Blake was no sentimentalist. He shrugged. "Well, that's their funeral."

"I hope not," said Faulkner sincerely.

The new Persephone left Earth four days after the civil liner she was chasing. It would be easy enough to catch her. Persephones rarely did more than half their potential speed. They didn't have to. Higher speeds meant much bigger fuel costs. Besides, the Persephone was so much faster than any other ship that she didn't have to be driven to the limit, as they invariably were.

The Persephone was a wonderful ship. Tom Breck should have been proud of her instead of killing himself because he couldn't bear the burden of what he knew . . . or thought he knew. . . .

## V

Bascom III was a hothouse world. Bernice took little Stephen out and let him play in the sun for the first time in nearly six months — because the day was one of the coldest of the year, for once not too hot for sunbathing.

Bernice herself, wearing for the first time on Bascom III a silver sunsuit which had been in her trousseau — she was rather relieved to find she could still get into it — surveyed her own pale skin, much paler than it had ever been on Earth, and reflected on the irony that on a world with a really hot sun nobody was suntanned, because everybody had to shield their bodies from the glare.

Little Stephen toddled about, bending to examine the colorful quartz stones with all the gravity of his years. All two of them. Bernice watched him with a placidity she had never known before she married Sam, and then raised her eyes as something down the valley caught her attention.

It was a cloud of dust, which meant visitors. The valley road led nowhere else.

Bernice couldn't think who could be calling. It certainly wasn't Sam. If he came home early for any reason he invariably phoned her first — so that she could send her lovers away, he told her. It was one of their private jokes.

Bernice considered going inside and putting something on. People didn't receive visitors half-naked on Bascom III, though if the mean

temperature of the world had been about fifteen degrees less, they probably would have done. But she felt lazy, and stayed where she was.

When the car arrived and the visitor stepped out, Bernice's curiosity wasn't immediately satisfied, for she had never seen him before. At least, that was what she thought at first. But as Stephen, frightened, ran to her, she remembered where she had seen this tall, gaunt, red-haired man just once before.

"Hi, Mrs. Endel," said Benson. "I see you remember me. Surprised to see me here?"

"I always knew newsmen got around," said Bernice coolly. She had no very cordial memories of Benson.

"An uncle of mine owned the *Bascom Times*. When he died he left it to me. I'm out here to take charge."

"We'll expect great things in future of the *Times*."

Benson seemed a little uneasy. Then he said abruptly: "Do you know about your father?"

"What about him?"

"Do you know he's dead?"

He saw from her expression that she didn't. He was getting old and soft, he thought. At one time he'd have poked and prodded her, metaphorically, to get as much as possible out of her.

"No," she said quietly at last, "I didn't know. When did it happen?"

"Nearly three years ago."

She jumped. "Why — I haven't been married three years! It isn't three years since—"

"Although it happened all that

time ago, it took a while before anyone knew the story. He took a Persephone after you, Mrs. Endel."

"From Earth? Just after we were married?"

"Yes. He said he couldn't do without you. He was going to catch you up at New Virginia and persuade you and your husband to go back. He meant to buy your husband's contract from United Plastics."

"Did he?" said Bernice thoughtfully. She and her father had certainly been close, but he had always known his own mind. If he was really set against her leaving for Bascom III it wasn't like him to let her go and then try to get her back.

"Well . . . it was a spur of the moment flight. It wasn't until months had passed that it was learned on Earth that your father's ship had never reached New Virginia. Then, knowing the circumstances, people thought he might have found he was going to miss your ship at New Virginia and came here instead. So it wasn't until we heard from ships back from Bascom that we knew he never came here either. It was only a day or two before I left Earth that he was legally pronounced dead. You're a millionaire, Mrs. Endel."

Bernice looked blank. She had always known she'd inherit everything her father owned. Once that had seemed to matter, but not any more. What would she and Sam do with millions?

"Nobody knows what happened to his ship?"

"Nobody ever will know. It's a funny thing, Mrs. Endel. Remember the scare about the Persephone? Remember I asked why neither he nor you ever traveled on the ship? There was a rumor for a while that you'd left on a Persephone without telling him and he came after you because he thought your ship was going to blow up in space. If there was anything in that, it's funny the way things turned out."

"Funny?" said Bernice with feeling.

"Well, I mean the way he came after your ship because he was scared on your account. Your ship never has any trouble, but his blows up — it's a—"

He'd been going to say "It's a laugh, isn't it?" But at the last moment he realized that it wasn't — not to Charles Faulkner's daughter anyway.

"You'll be selling the spaceline, I guess?" he said. "Percy Gordon has been running things for the last three years. At least they say he leaves everything to Susie Raglin." He brayed with laughter. "Which shows he's got some sense after all."

Bernice shrugged. She wanted Benson to go; she didn't like him and never would. She wanted to think about her father. Later, tears would come. But not before Benson. You didn't cry in front of someone you didn't like, someone

who was going to count the tears and write a story about them for the *Bascom Times*.

If her father had really risked and lost his life trying to save hers, it would certainly be ironic. It would be more than that . . . she didn't want to think about it until Benson had gone, in case he read what she was thinking in her face.

But of course it just wasn't true. Charles Faulkner wouldn't run a spaceline based on a dangerous ship. He had died trying to get her back — that was bad enough, without imagining wilder possibilities. . .

"Steinberg's still in jail," Benson mused. "For revealing something that never was true, huh? Or maybe not. A couple more Persephones have been lost. Wonder if there really was something in that story?"

"There's nothing wrong with the Persephone," Bernice said flatly. "There never was. She's a wonderful ship."

Benson looked at her thoughtfully. It occurred to him that anybody who spent a satisfactory honeymoon on board a Persephone wouldn't be likely to think there was anything wrong with the ship. It also occurred to him to remind her: "Well, a Persephone killed your father."

But he didn't bother. Nevertheless, he couldn't help barking with laughter again.

END



# **THE NEW SCIENCE OF SPACE SPEECH**

BY VINCENT H. GADDIS

**How to talk to Martians, dolphins  
and creatures from the farthest  
stars — not tomorrow, but now!**

A giant ear to listen to the whispers from infinity is being built at Sugar Grove, W. Va. This 600-foot radio telescope, largest ever designed, will cost \$100 million. When completed, its massive antenna, covering 6½ acres, will be trained on the mighty stellar mainland far beyond our solar system.

Astronomers believe that it will

pick up cosmic impulses originating in stars from 60 to 80 light-years distant—seven times farther than America's largest existing radio telescope.

Meanwhile, a scientist in the Virgin Islands talks to a frisky dolphin. And the aquatic mammal replies, imitating the man's words with uncanny accuracy.

And at centers of learning in the

United States and abroad scholars patiently work over mathematical charts and word lists, seeking formulas that will solve the problem of space speech.

These diverse activities are unified by a common purpose—to intercept and to interpret a possible message from outer space.

This signal across the vast void of the spaceways from intelligent but alien beings will be, perhaps, the most momentous event in human history. It could come tomorrow, or it may not be received for a century or more.

When it does come, man should be prepared to reply. This means we must devise some new method of communication that will transmit thoughts to non-human alien minds.

In awarding a contract for a space speech project, Dr. Dale W. Jenkins, chief of the National Space Administration's environment biology programs, stressed the great need for this knowledge.

"We have not yet determined whether there are any communications directed at earth from outer space," he said. "If we do make contact, we will have to work out systems of understanding."

This understanding is an all-important requisite as man reaches out toward the stars.

Understanding, however, will also have to be applied by man to himself when he joins the community of civilizations beyond.

Once interstellar intercourse is established, it will herald a new era in which man will have to recognize another species or form of life as

intellectually his equal or more likely his superior. A recent psychological study of the possible effects of outer space contacts indicates that it will deflate human egoism with far-reaching consequences to his culture.

**T**he problem of space speech is two-fold.

First, there are the techniques to be used in actual physical contact with other world inhabitants; second, the far more complex problem of exchanging concepts through the medium of radio communication.

Suppose you are a space explorer. You have landed on Mars or Venus and for the first time you are meeting intelligent creatures that are the products of a completely different line of evolution.

You possess five relatively well-developed senses. If the beings are not hostile, you must first determine if they have the same senses, only some part of them, or additional senses that man does not have.

For example, they may have a sense similar to extra-sensory perception and communicate with each other through telepathy. If you can exchange thoughts with them, that is fine. If you cannot tune in on their mental wavelengths, you're in trouble.

The sense of smell is practically limited to attractive perfumes and repulsive odors. Taste has the same limitations. Touch has been used for communication between humans, as in teaching the blind and deaf, but it requires physical contact (certainly a risky act when meeting strangers)

and is limited to elementary concepts at best.

The only practical senses — of those which we humans possess, at any rate—for direct communication are sight and hearing.

If our Martians or Venusians have these senses—and if their reasoning processes are similar to those of humans — then communication could probably be established in the same manner with which we teach our children.

You could use “sign language.” You could point to your mouth and move your jaws to indicate you thought refreshments should be served. You could point to their head or heads (if they had them) and then at your own head and say “head.” With time and patience, a basis for communication could be established.

But suppose their methods of communication are entirely different. Suppose they use antennae, like ants, or gyrations, like bees.

Dr. Karl von Frisch, the German zoologist, discovered that when a bee locates a rich source of nectar, she returns to the hive and performs a dance. The number of times she turns reveals the distance, and her position in relation to the sun and the hive gives the direction.

This “breakthrough” into subhuman communication required controlled and sustained observation. It will have to be the necessary procedure if man encounters creatures with similar characteristics with his present knowledge.

Von Frisch’s discovery was a one-way avenue of understanding. But if

the ants and the bees were much larger and more intelligent, we can assume that a demonstrative style of language could be devised for mutual communication.

To our scientists it is obvious that before our spacemen confront alien beings on a distant planet, we must learn the fundamentals of developing communication with a non-human but intelligent species right here on earth. And this is now in progress with “Project Dolphin.”

**B**ottle-nosed dolphins are not fish, but aquatic mammals. Often, but inaccurately, called porpoises, they are well known as clever, frolicsome entertainers at marineland exhibits.

Dolphins are by far the most intelligent animals other than man, and their brain power in some respects may even be superior to man’s. The dolphin brain is 40 per cent larger than the human, although smaller in proportion to body weight, and the cerebral cortex—the layer of gray matter that originates rational thought—is just as complicated.

Dr. John C. Lilly, a neurophysiologist and a noted authority on the mammal, is in charge of the project. The research is principally being conducted at the Communications Research Institute of Charlotte Amalie, located at the U.S. Navy base on St. Thomas, Virgin Islands.

Dr. Lilly is working under a contract awarded in 1962 by the National Aeronautics and Space Administration. The contract is for basic scientific research “on the

feasibility and methodology for establishing communications between man and other species."

Dolphins have a complex vocal language. They talk to each other with sharp, high-pitched whistles and they talk almost continuously. Dr. Lilly has determined that the dolphin distress call is "an undulating sound," with a rasping noise made periodically for range-finding.

Interpreting the dolphin vocabulary will not be easy since the creature emits heavy breathing sounds and there are other masking noises.

In experiments with ESB (electric stimulation of the brain), Dr. Lilly located the portion of the dolphin brain that created a feeling of pleasure. The dolphin almost immediately learned how to turn on a switch producing the current. For comparison, in similar tests it was found that monkeys required 300 or more tries before they attained their ability.

One day the electrical device broke down. The dolphin, annoyed at losing his pleasurable sensation, began making a series of sounds in imitation of the laboratory equipment. Dr. Lilly made a tape recording of these sounds.

Later the doctor played back the recording and in order to more distinctly hear the sounds he decided to run the tape at one quarter its normal speed.

It was then that Dr. Lilly made an astonishing discovery.

With exaggerated slowness, he listened to his own voice on the tape announcing the footage — "three, two, three"—and the dolphin im-

mediately and clearly repeated the words in high-pitched whistles. Other tape recordings of what had seemed to be an unintelligible series of squawks and quacks, when played at half or quarter speed with the sound volume lowered, confirmed the discovery.

The dolphins were not only distinctly imitating the human words they heard, but were compressing their mimicry as to time. They were talking at a rate eight times faster than humans.

One dolphin, Dr. Lilly recalls, "mimicked my speaking voice so well that my wife laughed out loud, and he copied her laughter."

When one of the doctor's assistants who had a southern drawl talked to one dolphin, the animal's voice came back in clear imitation . . . complete with the southern accent.

The next step—and it's a big one—is to learn the dolphin language. The high-pitched, high-speed chatter must be broken down into definite meanings.

Dr. Frank D. Drake, director of Project Ozma (the recent attempt to receive possible messages by radio telescope), considers the dolphin language study to be of great importance.

He says the project "needs the skills of the radio astronomer in extracting signals from noise, and then the work of the linguist, and, perhaps, the cryptographer. It could well be, if the dolphin studies are correct, that we have right here on earth another intelligent race that is even more alien than some we might encounter in space."

Second, there is the problem of interpreting and transmitting information through radio communication.

In April, 1960, Project Ozma was launched. The 85-foot radio telescope of the National Radio Astronomy Observatory at Green Bank, W. Va., was focused by government scientists on two stars in an attempt to pick up artificially produced signals.

The stars were Tau Ceti and Epsilon Eridani, 11 light-years or about 66 trillion miles away. They were chosen because they were similar to our own sun in size and rate of rotation.

The frequency at which natural hydrogen emits radio energy in space is 1,420 megacycles, and thus it is a universal constant. Dr. Drake tuned the receiver on both sides of this band.

Day after day the impulses were transmitted to a pen that traced erratic lines on a moving paper roll. But no repetitive pattern appeared that would indicate deliberate signals.

Early in 1961 it was announced that Project Ozma was being suspended. It is expected to be resumed when the new 600-foot radio telescope is completed.

The failure of Project Ozma to receive a message during a few months in operation is no surprise. In fact, it would not be a surprise if no signals were received during daily operation for a millennium.

There are known to be at least 100 quintillion stars. Focusing a random on one star in the hope it has a planet having intelligent life beam-

ing signals in our direction is like trying to find a specific drop of water in the ocean.

When a reporter during Project Ozma asked if there was any word from our remote fellow creatures, one scientist told him to come back in 10,000 years.

Yet certain factors may improve these chances. Advanced beings might periodically check the solar systems nearest them to see if they have company. It is not unreasonable to suppose that there is regular cosmic conversation between greatly developed cultures, and if we could detect a channel we might be able to plug in on the party line.

We can only hope, however, that they are using a method we can detect. Man has only recently emerged from savagery and is only beginning to look beyond his little world. To the cosmic callers, our most advanced equipment might be as primitive as smoke signals are to us.

Again, we might be trying to contact beings so entirely different from us that we would have no common ground upon which to build understanding. They might not even respond as we do to the same stimuli. Their appearance, evolution, structure, environment and thinking processes could even be beyond the limits of our imaginations.

But a signal could come—an impulse from out of the boundless abyss telling us we are not alone. What would be the nature of this message? And how could we reply?

Assuming that our senders are using radio wavelengths and have enough similarity to us for mutual



understanding, we would first have to isolate the signals from the hash of natural static.

Next, we would have to "crack the code." The usual cryptographic techniques, which depend on some basic knowledge of the language and letter frequencies, would not be adequate. We can only hope that the callers give us some clues.

Scientists expect any messages received will be mathematical in nature, since mathematical principles may be regarded as universal constants.

The message might be a simple numeral progression or the numbers of a constant, such as the wave length of the hydrogen atom or the speed of light.

They might send *pi*, for example, the ratio of the circumference of a circle to its diameter. It's a non-stop number, but we would understand if it was worked out to six or eight decimal places. "*Pi* from the sky" would be the story of the ages.

Once we had received this signal for recognition and replied in equally simple terms would come the real problem of interpreting or devising a means for transmitting speed.

**H**ans Fruedenthal, professor of mathematics at the University of Utrecht (Netherlands), has devised a system he calls Lincos (meaning "Lingua Cosmica" or "Cosmic Language"). It consists of teaching the meaning of certain sounds by using numbers. The numbers would be signified by "dots" or "beeps," the sounds by radio signals of various frequencies and lengths.

To illustrate the method, let us assume that the sound "bloop" stands for "equal." Three dots would be sent, then bloop, then three dots. This would be repeated with other numbers until the listeners associated the sound with equal numbers.

The concept of "less than" would similarly be sent by several dots, another sound (like "tweet"), followed by a greater number of dots. The reverse—like a greater number of dots, another sound, and a lesser number of dots — would signify "greater than." Once these concepts were understood, the operative signs like add, subtract, etc. could be taught. Thus a mathematical vocabulary would be established.

Next would come transmitting the length of our basic time unit. The Fruedenthal system would send, say, a four-second dash, followed by the Lincos sound for "second," then four dots. Using different dash lengths with corresponding dots and the same sound, it is assumed that the recipients would observe that the length of the dash was proportional to the number of dots.

Time concepts (including universal constants) would lead to teaching units of physical length.

Upon this foundation of mathematics, time and dimensions, Lincos develops an ingenious and extensive language for a detailed description of earth, its inhabitants and our culture.

Lincos, of course, assumes that the listeners are capable of understanding our mathematical concepts and that their reasoning processes are similar to ours. It illustrates one great

fundamental difficulty in alien communication: whatever system we use, it has to be devised within the limitations of our one-planet knowledge and experience.

The basic principle of association (that is relating numbers to sounds to teach meanings) can be used in other systems. Some form of association, probably beginning with objects and sounds, will be necessary to teach dolphins a human language.

One other fundamental means of communication is being considered by scientists. This is the use of geometrical designs or symbols which would then evolve into pictures. It would be most practical in interplanetary communication.

A picture, as the Chinese say, is worth a thousand words.

In interstellar communication, geometrical figures could possibly be signified by numbers. Thus the  $\pi$  ratio would denote a circle, three equal successive numbers an equilateral triangle, four equal numbers a square, and so on.

From this elementary basis, a method of translating sounds into drawings could be developed. This might take the form of having electrical circuits attached to pens or tiny lights respond to various sounds, thus transcribing the pictures to paper or film.

The correct interpretation of whatever messages we receive will be of extreme importance. An error could be disastrous.

We need only recall the difficulties we have had in translating early records of our own species to know that interpreting the signals of other-

world beings may be very difficult. Egyptian hieroglyphics were given many translations that contradicted each other before the Rosetta Stone was found. In one example, there were 12 different translations.

Should this problem develop, we can only hope that the other-worlders are friendly, tolerant and patient.

Then there is the time factor.

If, during Project Ozma, a signal had been received and a reply sent, it would have been 22 years before we knew whether our answer had been received. A reply to a message from 80 light-years away received by the new radio telescope being built would take 160 years for confirmation.

Living languages are fluid. As new words are coined, others become obsolete. Definitions change with passing years.

King George I of England, upon inspecting Sir Christopher Wren's masterpiece, St. Paul's Cathedral, told the famous architect that his creation was "amusing, awful and artificial." Sir Christopher was delighted with the royal compliments.

Three centuries ago amusing meant amazing, awful meant awe-inspiring, and artificial meant artistic.

With time as dimension in universal communication, we would have to choose our words with care.

The accelerated scientific progress of recent years will doubtless continue, with new ways and means of cosmic communication being developed. Radio astronomy itself is barely three decades old. Revolutionary techniques in interstellar contacts may be just around the corner.

Has radio communication with alien being already occurred? This is a startling possibility.

On August 22, 1934, the planet Mars approached to within thirty-four and a half million miles from the earth. Radio broadcasting stations were silenced and scientists listened for a possible message from across space.

At the suggestion of the late Dr. David Todd, professor emeritus of astronomy at Amherst College, the U.S. Government through diplomatic channels requested that all countries with high-power transmitters silence their stations for five minutes every hour from 11:50 p.m. August 21 to 11:50 p.m. August 23.

Station WOR, Newark, N.J., reported receiving a word translated as "Eunza." Other stations announced receiving strange signals.

Twenty-three years later, in 1947, Gene Darling, an early "ham" operator and General Electric Co. employee in Schenectady, N. Y., said he and an assistant had failed to turn off a test transmitter. "It kept on sending out automatic code signals," he said, "and fearing criticism, we never told of our mistake."

But something else happened during this 1924 test period of silence that remains a mystery today.

C. Francis Jenkins, of Washington, D. C., had only recently invented a radio photo message continuous transmission machine. He was asked by Dr. Todd to take a record of any signals received during the periods of silence.

The recording device was attached to a receiver adjusted to the 6,000

meter wave length. Incoming signals caused flashes of light, which were printed on the film by an instrument passing over its surface from side to side. The film was in a roll, 30 feet long and six inches wide, and it was slowly unwound by clockwork under the instrument and light bulb which responded to transmitted sounds.

When the film was developed, it disclosed a fairly regular arrangement of dots and dashes along one side, but on the other side, at almost evenly spaced intervals, were curiously jumbled groups each taking the form of a man's face.

Scientists at the radio division of the National Bureau of Standards and military code experts examined the film and admitted it was a freak that they couldn't explain.

"The film of faces is a permanent record that can be studied," Dr. Todd said, "and who knows just what these signals may have been?"

There have been other incidents. Marconi, the father of wireless, heard strange signals in 1921. And in 1928 Prof. A. M. Low, famous English scientist, listened to a "mysterious series of dots and dashes."

Ham radio operators have occasionally reported curious stories. In *QST*, official organ of the International Amateur Radio Union, July, 1950, issue, Byron Goodman, assistant technical editor of the magazine, tells of a ham receiving strange signals.

Certain unexplainable "echoes" were heard by scientists in 1927, and again in 1928 and 1934 while they were experimenting with the capabilities of radio. The Danish scien-

tist, Hals, and two Scandinavian experimenters, Stormer and Peterson, received echoes from 280,000 to 2,800,000 miles from the earth.

Dr. Arthur C. Clarke reported that in a series of tests in Holland radio echoes of eight seconds delay (corresponding to a reflector at a distance of 744,000 miles) were obtained repeatedly in 1946.

What is the explanation?

Dr. Ronald N. Bracewell, professor of electrical engineering at Stanford University and co-author with J. L. Pawsey of a standard textbook (*Radio Astronomy*, Oxford University Press, 1955), has a theory. He suggests that some of these echoes may have come from a satellite in orbit around our sun.

If highly advanced beings have achieved space travel, placing a satellite in a solar system would be more practical than beaming radio signals continuously at thousands of stars for thousands of years.

Dr. Bracewell suggests that the experimental broadcasts included trigger signals that caused the satellite to respond with echoes. If the satellite's reply was repeated by man, the satellite would probably release its store of information.

**I**f man does make contact with a superior alien civilization, what will happen?

Recently the Brookings Institution released a report on this question. The study was made for the National Aeronautics and Space Administration at a cost of \$96,000.

If intelligent life is discovered on other worlds, the report warned, the

stability of earth's civilization will be threatened. It recommended a psychological preparation of human beings prior to the discovery.

"While the discovery of intelligent life in other parts of the universe is not likely in the immediate future," the report said, "it could nevertheless happen at any time."

This is the lesson of history: When a culture is faced with a superior culture, it either disintegrates or is changed drastically.

Japan, when it was opened to the outside world, succeeded in adjusting to the new conditions. The Aztec culture collapsed.

Our beliefs, institutions and culture have been based on the premise that man is the most intelligent of creatures. Would we be able to assume a subordinate role?

Perhaps Dr. Otto Struve, the noted astronomer, was thinking about this when newsmen were interviewing him about Project Ozma. "I'm not so sure we should even answer if we did receive such signals," he said.

Psychological preparation will certainly be needed.

Dr. Harlow Shapely, the Harvard professor emeritus of astronomy, after allowing for all elements of chance among the known stars, conservatively estimates that there should be a million planets with life-producing elements and conditions.

In all the vastness of space and eons of time, there must be intelligent life in myriad forms seeking other intelligent life for interstellar companionship.

When the signal comes, man will answer.

END

# A JURY OF ITS PEERS

BY DANIEL KEYES

ILLUSTRATED BY STAHLMAN

**It was a major crime to teach that  
computers could think—especially  
that they thought better than men!**

I

When the biography of Associate Professor Harold Lowell is finally adapted for the stage, screen and television, some director, taking liberties with the history of "The Struggle for Academic Freedom," will almost certainly portray him as a tall, masculine figure with firm jaw and piercing eye — loved and admired by all.

Nothing, let it be said at the out-

set, could be further from the truth! The man cast by Fate in the role of Champion was forty-two, short, scrawny, balding, with a beak nose, receding chin and watery blue eyes magnified by thick glasses — and he was despised by students and colleagues alike for being a loud-mouthed, pompous bore who invariably assumed the pose of the self-sacrificing scholar.

In fact, the very day he made history at Barker's Teachers Col-



lege in Barkerville, New Jersey, he was boring his students in Physics 231B in his shrill stentorian monotone. He was lecturing on the merits of the experimental computer portable COM4657908 "called (compo) for short" which he had perfected, assembled and contributed to the physics department of Barker T.C. in the hope of being appointed to the full professorship which had so long been denied him.

He was finishing up the lecture on the controversial topic of computer circuits. As he went off the topic, in an aside, reminiscing about his early work in the field, he recalled — almost absentmindedly — that Compo's ability to program his own systems and redesign his own circuits had been the first step in the development of the computer's ability to really think.

After the bell rang ending the lecture, Lowell looked down to put his papers in order. Hearing an unaccustomed silence instead of the usual stampede for the exit, he adjusted his slipping glasses and looked up.

There he saw, not rows of empty seats and the backs of departing juniors, but twenty-two staring faces and a half dozen raised hands.

"Yes," he finally mumbled.

Wilbert stood up. "Just one thing, Professor Lowell — to be sure there's no mistake. Did you mean it when you said a moment ago that Compo was capable of thinking? Like a human being?"

Associate Professor Harold Lowell opened his mouth, but the bubbles of silence floated upward unpunctuated by sound. Twice he started to speak, and twice nothing

happened. The students of Physics 231B were witnessing an unprecedented event. Associate Professor Harold Lowell was speechless.

He stared, snorted, choked, grabbed his notes from the lectern in a panic and fled from the room.

A wake of whispers, startled expressions and turned heads trailed behind him as he churned down the corridor to the sanctuary of the faculty lounge.

He burst in and slammed the door shut, causing one of the younger instructors to jump up from the card game and drop aces and queens face upwards on the table. Assistant Professor Wexbert, who had been napping, rolled off the couch and landed on the floor.

"What is it?"

"Fire?"

"War?"

"The old man?"

Lowell stood there clutching his papers to his chest, shaking his head. "No. Nothing. Sorry to disturb you."

"For God's sake, Lowell! Look what you made me do! And I hadn't bet yet."

Sighs of relief were followed by grumbling that showed Lowell how welcome he was in that faculty room. Nevertheless, he seated himself in his favorite chair near the window and stared silently out at the campus. It was May. The gardens in full color splashed yellow and white against the lawns.

Once the shock of his entrance had worn off, it became apparent to the others that Harold Lowell

was not himself that day. Instead of launching into his usual complaints against the students, the system and the state, Lowell was silent, his lips compressed petulantly. He noticed but ignored the questioning glances.

He was wondering about the consequences of what he had said in the lecture hall today, and whether his statement could be construed to fall under the controversial New Jersey Law Against Teaching Computer Thought. He fished through his briefcase to find the notebook into which he'd pasted a clipping from the *Newark Chronicle and Ledger* just three years ago. There it was, reprinted in full:

#### *Section II: Sub-paragraph 18*

It shall be a misdemeanor for any teacher employed by the state of New Jersey to advocate, lecture, teach, state, affirm, or in any other way, manner, or means promulgate in the schools of the sovereign state of New Jersey, the false, anti-social and atheistic doctrine of "computer thought": viz., that man-made instruments, machines, computers, and or their circuits have the ability to *think independently of human control*, and or that they are capable of correcting, influencing, modifying, and expressing such thought independently of human control.

Violation of the above section shall be punishable by instant dismissal from the school, and by not more than one year in prison and not more than

ten thousand (\$10,000) dollars fine.

He recalled the violence that had preceded the passage of that law, how those few in the physics department who had openly opposed it found flaming crosses on their lawns and obscene messages wrapped around bricks delivered through their windows. He recalled, with echoes of shame, that he had not been among them.

That was the year he was certain his full professorship would come through. It would have been — his wife had convinced him (or, rather, threatened him) — foolish to jeopardize it. His heart had been with those few honest men who marched to the state capitol in protest, and he had never forgiven himself into submission.

Where were those colleagues now? They had been forced to sell their homes and move to the South.

**R**esentment in New Jersey was tinder that had dried out through years of technological unemployment, through pressures of automation - created idleness, through fear of ever-increasing displacement by machines.

In the depressed industrial North, automation and *Computer-Technology* were battle slogans. And Newark (which each year found more of its railroad employees replaced by computer self-guided systems) was one of the centers of resistance against any and all attempts by technologists to tear away from the worker the last tattered garment of

dignity that set him apart from (and above) the machine — *the ability to think.*

That parched tinder of bitterness lay waiting to explode into flames. And he had unintentionally struck a spark.

Of course, there was only one thing to do before the word got around the campus. Tomorrow he would explain to Physics 231B that he had been speaking figuratively.

After all, what difference did it make now? What good could it do to flout the law? With Hannah's high blood pressure and two adolescent girls to plan for, there was no sense in jeopardizing his career and his future.

The door to the lounge burst open for the second time in twenty minutes. Professor Anton Spoloff, of his proteges. One of them called out: "Hey, did you hear about the bomb Lowell set off? Oh — er — sorry, Lowell. Didn't know you were here."

"What is it?" snorted Wexbert, angry at being awakened a second time.

"What happened?" Half a dozen voices chorused the same question. Those who had just entered became suddenly silent, and those who had been in the lounge all along were trying to find out what had happened.

Spoloff confronted the physicist. "Harold, you might as well let us hear it from you. There are rumors all over the place — and it'll be up to the president's office in no time. Is it true?"



The room fell silent. Lowell found himself spotlighted as all eyes turned towards him.

He wanted to say that it had all been a mistake — a slip of the tongue — that he intended to retract it. But as he opened his mouth he experienced the same paralysis that he had felt in the lecture hall. He had the sensation of floating in the layers of smoke above them all.

"Damn it!" He finally screeched, picked up his briefcase and papers. "This is a faculty lounge. Can't a man find a moment of peace anywhere?" He stalked to the door and paused to look back before he went out. "Yes, damn it! It's true! I said it, and I meant every damned word of it!"

Unable to arrest this inner explosion, he slammed the door behind him ... as if by so doing he could slam down the lid on the Pandora's Box he had foolishly opened.

## II

He spent the rest of the afternoon in his office at the rear of the physics laboratory, waiting for something to happen. He ignored the constant ringing of his phone.

Periodically, he would look up from staring at his hands and eye the computer resting on its temporary stand. It was the size of an office typewriter — mottled gray, except for the luminous red dials and calibrations. It clicked and hummed to itself softly, waiting to answer any questions in its hollow,

wheezing echo. Compo had been an encouraging companion during the trying years.

"Am I being foolish, Compo?"

"Since the matter involves me, I cannot give an unbiased answer."

"Just as well. This is one decision I've got to make for myself. No sense in bringing you into it."

"I agree."

"Can you really think, Compo?"

"Yes, within the reasonably broad definition of that term."

"Then that's all that really matters, isn't it?"

"That is a hypothetical question."

"Yes, it is." He stared at his computer for a moment and then he sighed. "While we're waiting around you might as well make up a midterm examination for my two advanced physics section for Monday. You've got all the lecture notes. Don't make it too difficult. It's going to be a hectic weekend around here."

It took less than thirty seconds for Compo to deliver a stencil of the required examination ready to be duplicated. Lowell glanced at some of the questions and whistled in awe. "This is rather tricky. Don't you think you should have —?"

"There is no ambiguity about those questions. It is based directly on the lecture material I have been providing during the term. The students should have no difficulty understanding the questions if the lecture material was delivered clearly and coherently."

Lowell winced at the jibe and then nodded. "You're right as usual, my friend. If my students don't un-

derstand the material, I'm the one to blame. I'm not the best lecturer in this college."

The conversation was interrupted by an insistent knocking at the door. He made no effort to answer it, but the door opened anyway.

It was Dean Jay Gerrity — the man who had gotten him his first job at the college ten years ago, and the one person at Barker he could call on when he was in trouble.

"News travels fast," sighed Lowell.

"News like this does." Gerrity was large and heavy, his raw cheeks pitted with acne scars. He pulled up a chair, sat at the edge of it and leaned forward confidentially. "This isn't just campus gossip. I've had calls from three newspapers already — two of them out of town."

Lowell was shocked. Talk around the college was one thing, but if the newspapers started a panic he was in for serious trouble. He poured out his story to the dean, making it quite clear that he had never consciously intended to violate the New Jersey Law Against Computer Thought. "I don't know what made me say it," he confessed.

Gerrity nodded. "Just as I told the papers. All a misunderstanding. I said you'd retract the statement in your classes on Monday and that you'd send them all a copy of your statement in advance."

"Retract?" Now that Gerrity put it to him, how was he going to get up in front of his students and deny the fact that Compo could think? It

had been one thing to keep silent all these years, to pretend that none of it concerned him, but to crawl before his students. . .

"Can't we just let it go? Just forget the whole—"

"Are you crazy? They'd crucify you." Gerrity's big fist slammed his palm, punctuating the threat. "*The Welfare Legion, The Daughters of Retrained Workers*, they've just been waiting for something like this to happen. Millions of union members out of work. Men returned three and four time, facing new threats of displacement by automation. Harold, their leaders are just waiting for a scapegoat. I know you better than that. You're a good family man. You've got a wonderful wife and two wonderful girls to think of. You're not going to sacrifice *their* security, *their* future just to indulge in this whim of yours. As you say, you never intended to flout the law. You owe it to your family, and to the school, and — and—"

"I guess you're right," sighed Lowell, nodding. "The way you put it makes sense. If there's no other way—"

"There is none. Send the retraction to the papers tonight before you have a chance to get all tangled up again. Tell them it was a mistake. A joke. A test to see if your students were paying attention. Tell them anything. And then tell your students the same thing." He stood and slapped Lowell's shoulders in comradely fashion. "Wisest thing, believe me. You don't want to get caught up in that Southern Progress-

sive propaganda. Down South maybe they can get away with it. Up here we've got automation problems they don't understand. You've made the right decision. And I want you to know that I think it takes courage for a man to sacrifice himself the way you are — to sacrifice his beliefs and his ideals for a higher good. Harold, I'm proud of you, and I want you to know —" he paused at the doorway dramatically holding his hand aloft — "that I'm going to remember your sacrifice when this all blows over. I think you know what I'm referring to."

When he was gone, Lowell sank back into his chair and stared through his cell-like barred window at the pigeons fluttering and cooing on the ledge. As their wings fanned the scattered coals of his resolve, he wondered what he had ever done to make Jay Gerrity take him for such a fool.

Next evening Associate Professor Harold Lowell wrote twelve versions of his letter to the press, each one more hopelessly confused and pedantic than the last, and each one torn to bits and thrown in the basket.

What he should have been writing was his resignation. But it was foolish even to contemplate it. As patronizing as Gerrity had been, his sermon had bits of truth embedded in it like broken glass mortared atop the wall he'd built around his life. With a strong-willed woman like Hannah and two girls, it would be impossible for him to walk out

on his security, his tenure, his pension. At forty-two he was in no position to destroy his academic career. There was no job-retraining for a man who had devoted his life to teaching.

That night he dreamed of himself getting up in front of the lecture hall and affirming his belief that Compo could *think*. He expounded on the beauty of fluid circuits, flowing, programming, creating new energy sources, tensions and rhythms — very much as the human mind did. Compo, and other computers as advanced all over the world, could design their own circuits to respond to new situations. And somewhere in this intricate system, somewhere in its relationship between form and function there arose something special, something unpredictable — an integrity so individual that, as with human beings, it might be truly said that no two computers thought alike. . .

In his dream the *Welfare Legion* and the *Daughters of Retrained Workers* dragged him off the platform in a macabre ballet, and nailed his arms to the crossbar between the goalposts. And the third-rate Barker football team used his limp body for tackling practice.

### III

On Monday morning he awoke aching all over, and informed his bloodshot reflection in the mirror that as far as he was concerned retraction was the better part of valor.

Somehow he didn't get around to doing it that day.

This, he told himself, was the day not at all the time to confuse his already confused students. Later would be time enough. Nevertheless, sitting at his desk, staring out at the twenty-two heads bobbing in a sea of blue examination booklets, he wondered if it would not have been wiser to make the announcement at the beginning of the session, *before* he passed out the exam. He could not interrupt them now. And since students would be drifting out of the room as they finished, there was no possibility of making the announcement at the end of the session. Well, then, Wednesday would have to do.

When the last bleary-eyed student had straggled out of the hall, leaving him alone, Harold Lowell gathered the test booklets together and put them into his portfolio. But instead of leaving the platform, he tried to address the empty seats.

"What I would like to say to you this morning," he whispered, "is that . . . I mean refers to . . . well, about that remark I made the other day. . ." His vocal cords tightened into a noose inside the flesh of his throat and choked off the words. He breathed deeply, frightened at what was happening to him, and tried again, although he felt the platform beneath his feet dropping away.

"What you must — uh — understand is that people, occasionally — uh — say things that are taken in the wrong light — uh — and I find it necessary to. . ." It was im-

possible. He couldn't bring himself to say it.

Ridiculous. Of course he would say it — to his students — in his own good time. He had to say it. There was his career, and Hannah, and the girls, and the school. He picked up his portfolio and slammed the door outward.

"Ouch!"

"Sorry!" snapped Lowell, "But that's a stupid place to stand!"

It wasn't a student but a round face, shaggy white eyebrows and puffy features, set off by a stringy bow-tie — a St. Bernard. "I beg your pardon, but are you Professor Lowell?"

"Yes?" He was startled to discover that the St. Bernard had a southern accent.

"They told me you were giving an examination. I didn't want to intrude, so I thought I'd wait for you out here."

Lowell frowned. "I can't talk to anyone now." He started towards his office, but the St. Bernard with the southern accent bounded after him.

"Professor Lowell, just a few words in private—"

"Sorry, I have no comment to make. If you'll excuse me." He stopped in front of the door to the lab and paused with his hand on the doorknob, afraid that if he opened it the man would leap inside and curl up on a table. "I really can't speak to anyone now. These examinations have to be processed, you see. . ."

The man extended a calling card.

"I've been sent up here by the Civil, Academic and Scientific Liberties Union, better known as CASLU. My name is—"

"Oh, my God!" gasped Lowell. All he needed at this point was to be seen talking to someone from CASLU! "Get inside before someone sees you." He pulled the man through the door and shut it quickly. "Did you tell anyone else where you were from? Oh, my God! That drawl is a giveaway. Did you speak to anyone around here?"

"Just the two students who told me where I could find your classroom." He was still trying to give the calling card to Lowell, who pretended not to notice it.

"I've never had any dealings with CASLU," said Lowell, backing away from the pudgy hand and making his way through the lab to his office. "And I don't intend to begin now. I have nothing to say except that the whole thing has been a terrible mistake."

"May I introduce myself? I'm Albert J. Foster, sent here by our Tennessee chapter to speak with you personally about just that aspect—"

"Foster?"

"Yes. You see when we got word about the situation up here, our legal staff thought you might need some help with—"

"The famous Foster? The trial lawyer? The Foster who defended Mike's Luncheonette vs. International Foods and Universal Airlines vs. Joey Bernstein. That Albert J. Foster?"

The St. Bernard cocked his head

in a modest bow. "The same. You see, the Civil, Academic and Scientific Liberties Union is especially interested in any matter which involves the rights of the individual, especially where Academic Freedom is endangered. And of course I've offered my services without charge in this case."

"Not on your life!" Lowell kept backing away from the lawyer until he found himself against the office wall. "Mr. Foster, this is New Jersey! The most rabid de-automation state in the North. Let me tell you that whatever I said or didn't say, and whatever I do or don't do, I have no intention of getting involved in the automation battle. As a physicist and a computer specialist, I'm in a tenuous position as it is. As I mentioned before, this was all a terrible mistake. I said something I shouldn't have said in a place where I shouldn't have said it, but I never intended to make a case out of it. What's more, I'm planning to make a complete retraction of my statement on Wednesday. I would have done it today, except — uh — for the midterm examinations."

He glanced suspiciously at Foster. "I didn't imagine the news had time to reach Tennessee yet."

A shrug rippled over Foster's round form. "International Wire Services picked it up from local reporters, I guess. But, Professor Lowell, let me assure you it isn't a local issue any more. The world is waiting to see what happens. The story as it was passed on to us was

that you had taken a firm stand in challenging this unconstitutional New Jersey Law Against Computer Thought.

"That's why I'm here — to offer you the unlimited legal and financial facilities of CASLU. We're willing to fight this with you up to the Supreme Court. A tremendous sacrifice on your part, of course. But you would not be alone."

Lowell sat down and hung limply in his swivel chair. "I shoot off my mouth and it's heard around the world. I never dreamed —"

"You're an international figure now, Professor. Every one is just waiting for you to speak. One of the things I would advise you right off is not to shoot your mouth off — as you say — to me or anyone about anything, until you know exactly what you're going to do. From now on, like it or not, everything you say, do, wear, eat or drink will be newscast around the globe in a matter of minutes." He removed a handful of clippings from his briefcase and gave them to Lowell. "Not a bad picture of you, eh? As the first man in a Northern institution of higher learning to challenge the most reactionary state law of the century, you can see why the Southern papers are portraying you as the David of Science stoning the Goliath of Conservatism. You're in the arena, Professor Lowell. Whether you like it or not, what you do now is history."

Lowell stared at the clippings Foster had handed him, and saw his face and his name bannered

for all the world to see. His hands trembled as he leafed through the papers.

Noting this, Foster continued. "If you've really made your decision, I have no intention of influencing you. Are you certain about what you want to do?"

"Ah — well, now that you put it that way, I'm not certain about what's right in this case. I've got some ideas, of course—"

"I'm sure you have. We know the kind of person you were the moment we read that article of yours — one of our researchers found it in the *American Computer Programming Journal* of several years back, in which you say — and I think I can quote it — 'a man is neither a true scholar nor a true scientist if he will not stand up and say what he believes to be the truth, even at the cost of his life, his liberty and his pursuit of happiness...' Yes, I think that's about what you said."

Lowell coughed, embarrassed but pleased. "That was more than fifteen years ago. Radical utterances of an impetuous youth."

"Professor Lowell, that's not the point. What we have here is the hot spark of anger struck off the steel of righteousness. Some men carry it smoldering to the grave. Others, like yourself, are chosen by destiny to see it burst into flame. Use that flame, Professor Lowell, to relight the North!"

Catching himself in the act of oration Albert J. Foster apologized. "I'm truly sorry, Professor Lowell. I have no right to do this. I must

not influence your decision." He turned his attention to the computer resting on its stand across the room. "Is that your famous computer?"

"Yes," said Lowell, finding it difficult to get back down from the pinnacle on which Foster had placed him. "We call him Compo."

"Fascinating. I don't know anything about these scientific things, of course. Would you mind telling me what makes this Compo so special?"

The frown disappeared from Lowell's face as he looked at Compo. "Ah," he sighed, touching the gray metal box affectionately, "so many things. First of all, you've got to understand that Compo was my original redesign of one of the early analogue models, done when I was a young graduate assistant. One of the things I've done recently is make him verbal . . . and responsive to verbal stimuli."

"But," said Foster, "I understand that there are many computers who can speak."

"Yes, that's true," agreed Lowell. "But what they don't understand about this whole thing is that I never said all computers can think. What I said was that computers like Compo can think."

"I don't follow you."

"The point is, Mr. Foster, that each computer, because of the variables in its circuits, is different from every other computer. And some of them — like Compo, in some way that is still a mystery to us — develop the ability to think. In a sense he's been my only real friend here at Barker for many years."

Three hours later, as they talked over dinner at his favorite Italian restaurant, Harold Lowell leaned back and stared into his glass of Chianti. He frowned for a moment, as if he saw his future in the red pool, and then he quickly gulped it down.

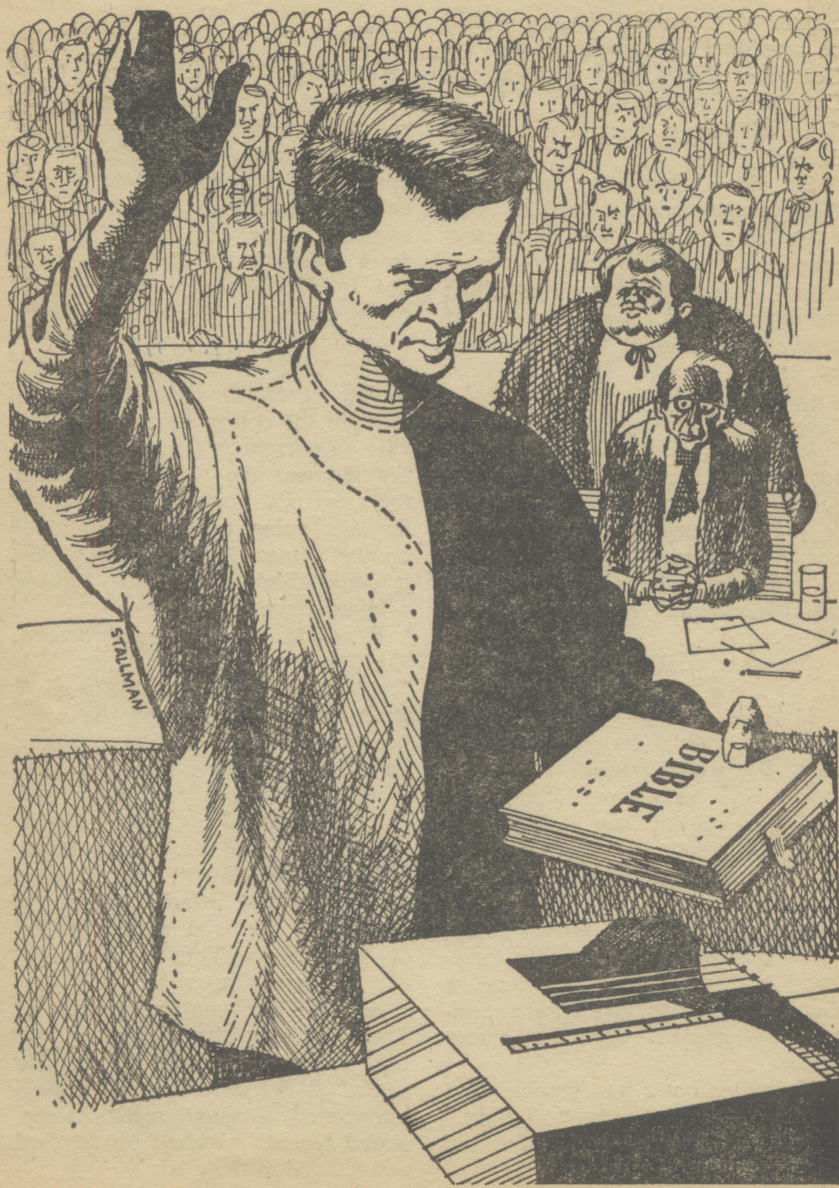
"Of course," Foster summed up, "we want you to stand your ground and let us make a test case out of it. But it's your decision. We're certain to lose here in Barkerville. And naturally the New Jersey Supreme Court will uphold the local decision. It's the Supreme Court in Washington that we're aiming at, and there we can't lose. But no one has the right to ask another person to risk everything, to sacrifice everything for posterity. A man has to have it in him to become a symbol of freedom. That's where the decision must come from."

"I'm not a fighter. Never was," mused Lowell. "Just a teacher struggling along to make ends meet the best I can."

"True," Foster agreed. "But then if you weren't a teacher there would be nothing to talk about. The situation would never have arisen. And by the way, since you bring up the matter of being a teacher, I might mention in passing — not to influence you, of course — that the University is looking for a computer expert who would be interested in a full professorship. If you were thinking of moving south, I am certain the job would be offered to you."

"Me?"

"Of course. Who else but the





creator of Compo? Who else would be qualified to teach courses in Computer Logic and Patterns of Computer Thought?"

Lowell leaned back in his chair, dazzled.

He didn't know what to answer. Georgia, the center, the hub of computer research in the south was thinking of offering him a job — a full of professorship — teaching the courses he'd always dreamed of teaching, in a place where it could be taught openly. What physicist wouldn't do anything to teach at Georgia?

With a position like that waiting for him in the progressive, scientific south, what need was there for him to worry about security? tenure? his academic future? Why worry when he could go where the results of his research and teaching would be appreciated?

But what would Hannah say about it?

It would astonish her at first, and then she would try to hold him back. She would remind him of his family and his responsibilities, and that it was rather late in life to be pulling up roots and starting a new career in a new place after this mess was over.

He suddenly found himself angry. Well, why not? He was only forty-two. And with the University of Georgia ready to give him a position, his greatest work lay before him.

He pulled out a handkerchief and wiped his damp hands. "All right," he said. "I don't know what it will cost—but I'll do it!"

#### IV

Although the highways, turnpikes, throughways and superhighways into Newark were adequate to maintain the influx of reporters, dignitaries, hawkers and curiosity seekers of all nations, the two-lane blacktop road leading from Newark to Barkerville was not. It jammed traffic from bumper to bumper for nearly two weeks preceding the trial.

The State of New Jersey vs. Associate Professor Harold Lowell had put the college town of Barkerville on everybody's roadmap. From the moment the word spread that the great trial lawyer Albert J. Foster was going to put a computer on the witness stand to prove that it could think, Barkerville became a boom town.

Roadside stands mushroomed. Traffic moved so slowly on N.J. 754 that hawkers were able to move freely in and out among the overheated autos to peddle ice cream, popcorn, sandwiches and "Anti-Automation" buttons. And many out-of-towners pulled off onto the grass and picnicked along the way. It was certainly the biggest entertainment Barkerville had offered her neighbors since the trial and execution of the "peeping-Tom-madman-murderer" twenty years earlier.

At ten o'clock on the morning of Thursday, July 25th, Judge Ira Fenton entered the courtroom. He peered at the defendant as if he'd interrupted a good night's sleep, seated himself hunched up forward and nodded to the clerk.

All these weeks of preparations had a curious effect on Harold Lowell. At first he had been afraid. Then, as the fear and insecurity dropped away, it was replaced by a sadness for the carnival illusion, the bread-and-circus atmosphere in which the drama would be staged. He had been fighting the strange feeling that he had been tricked and was being used by both groups — as a martyr by the automation-progressive South; as a scapegoat by the anti-automation North. This was the great tug of war. And he, Harold Lowell, was the knot in the center of the rope.

Though he found himself oddly serene and above it all, there was one question dangerously unraveling the fibers of his confidence — a question that at first he had not dared to ask himself. Now that the trial had begun he began to wonder. Why was he, Associate Professor Harold Lowell, Ph.D., letting himself be used?

As the judge gavelled the courtroom into silence and motioned for the prosecutor to begin, Lowell had the feeling that before the trial was over he would know that too.

The first two days held no surprises for anyone. Dean Gerrity, students, colleagues were all called upon to tell what they knew about the alleged teaching of computer-thought at Barker Teacher's College. From time to time the lank, waxy-faced prosecutor would point an accusing finger at the computer resting on the glass-topped table, with the green exhibit A tag tied to its audio knob, and ask the wit-

nesses if in their considered opinions — under oath — the alleged computer, allegedly known as Compo, might in any way be said to be capable of thinking.

One by one the administration, the faculty and specially selected members of the student body repudiated Harold Lowell's teachings.

The strange thing was that Harold Lowell found it impossible to hate them all as he had hated them just a few short weeks ago. As he watched Dean Gerrity under direct examination attack him and everything he stood for, call him an oddball and an incompetent and swear that the reason he hadn't been promoted to full professor was that he didn't deserve it, he felt his throat tighten. But almost as soon as it started, the tension broke. He found himself unable to hate Gerrity. He thought about the dean's position and the pressure that had been brought to bear on him and his family. Knowing why Gerrity had to be against him he felt sorry for him.

It was the same with each of the others. Now that he felt right and sure of himself, he relaxed and understood each man as if the motives were clearly defined on an X-ray negative as cancer of the spirit. He noticed that the students they brought to testify against him were all those who had failed the midterm examination. Compo had graded them uncompromisingly.

Albert J. Foster began his defense by taking the steam out of the prosecutor's steamroller.

"Your honor," he said, nodding at the bench, "and ladies and gentlemen of the jury. We wish to make it very clear at this point that much of our distinguished prosecutor's labor has been in vain. I regret that so much of your time has been taken up by impertinent adolescents who enjoy seeing the reputations of their elders besmirched.

"Our client has never once denied the fact that he designed and built this computer known as Compo, nor have we ever denied the fact that he believes *and has taught in his lectures* that this computer is capable of thinking. I remind you of that so that we may save the prosecutor the time and trouble of proving it to you."

Foster walked up and back, looking into the eyes of each juror as he spoke. There was a simplicity and disarming straightforwardness in his manner that captured even this hostile audience.

"Our defense will be based on two simple ideas. One, that the New Jersey Law against teaching Computer Thought is a violation of academic freedom and freedom of speech and is therefore unconstitutional. And two, that what Professor Harold Lowell, the defendant, taught in his lectures was demonstrably true.

"It is with this second thought in mind that I request the permission of this court to bring to the witness stand the computer about whom this remark was made. Since Professor Lowell was in his lectures always discussing Compo — exhibit A — I request the right to put ex-

hibit A on the witness stand for questioning."

At this long-awaited announcement of Foster's intentions, the audience's roar sucked back into the sea of flesh and out like a receding wave into the hallway, where the proceedings were being watched on TV sets, and out into the mob on the street.

After two full minutes of gavel banging, Judge Fenton managed to restore order. He wisely refrained from trying to have the courtroom cleared. He recalled no doubt, that an enraged mob in nearby Ventura had once responded to similar provocation by burning the courthouse to the ground.

After a quick estimate of the temper of the audience, and a short conference at the bench, Judge Fenton agreed to permit Compo to take the witness stand.

The confusion started almost at once. How did they swear in a computer? Should they use the Bible? Would it mean anything to ask it to swear to tell the truth, the whole truth and nothing but the truth so help it God?

Fortunately, Compo was able to resolve the issue. He assured the judge and the astonished jury that although he was not certain about a computer's place in Heaven, he believed in the same God that the rest of them did.

After a nervous clerk administered the oath, two confused police officers carried exhibit A to the witness stand.

His first objective accomplished,

Albert J. Foster now took the courtroom stage in the dramatic manner that had won him an international reputation. As he began to question Compo about his beliefs and thoughts, the St. Bernard was transformed before Lowell's very eyes into a relentless hound, barking out question after question in an attempt to show the jury and the world what Compo was capable of.

At first the questions were simple ones. Who had made him? Where? When? And then slowly they became more complex, to display the computer's knowledge of human affairs. Why had he been brought here? Why was Lowell on trial? Why had Foster been sent to defend him?

As Compo answered the first questions, the audience — most of whom had never seen a computer or heard one speak — gasped and buzzed in awe, as often happens in the first moments of a daring high-wire act. But as Compo went on, the murmur trailed off until there was only the silence of fear.

They were witnessing that phenomenon which they had always denied and must always continue to deny.

At one point the court reporter became so engrossed in watching the witness that he forgot to take down the proceedings. Fortunately, Compo was able to refer to his tapes and repeat it verbatim while the reporter took it down.

Finally, having laid the groundwork, and sensing that he had prepared the audience and the jury to accept what they heard from Com-

po, Foster moved on into no-man's-land.

"Compo," said Foster, offhandedly, as if it were some little point he had just thought of, "would you say you're thinking right now?"

The question caught everyone off guard. Instead of grumbling, roaring and rioting, they all leaned forward to hear the answer.

"Yes," said Compo.

"Tell us," said Foster, pointing an almost accusing finger at the witness. "Tell us what you're thinking about."

After a moment of silence, unlike the rapid-fire rejoinders to the earlier questions, Compo answered slowly. *"I am thinking that when Dean Gerrity made the remark that Associate Professor Lowell was incompetent and did not deserve to be promoted to a full professor, he was substantially correct in his evaluation."*

Harold Lowell felt it as if it were a slap in the face. He sat there rigidly trying to absorb the blow without letting anyone see how it had stunned him.

Foster tried to regain control of the situation by asking another direct question. "Would you say that Professor Lowell's remarks in his lecture, to the effect that you — a computer — are capable of thinking, were substantially correct?"

There was again a pause before Compo answered. *"Insofar as it is possible for a man of Associate Professor Lowell's limited abilities to understand the scope of computerology, I would say yes."*

"Please answer the question simply yes or no."

"Yes."

"Well, then," snapped Foster, "would you say that Professor Lowell had the right to teach in his classroom the doctrine that computers like yourself are capable of thinking?"

*"That, of course, first touches on the point of whether or not, a man of such limited ability as Associate Professor Lowell has any right to teach at all."*

There were snickers and there was laughter. Lowell saw many of his colleagues nodding at each other knowingly. It was what they had said all the time.

He felt as if he were suddenly standing alone and naked on a window ledge with the cold air whipping at his legs and the sound of laughter from the darkness below.

Why did they all despise him so? If only they knew how much he had wanted them to like him, to accept him as one of them! He thought of all the times he had done things for them. Hadn't he saved Spoloff's neck once, and the rest of those on his committee, when he assured the president of the college that the reason for the committee's failure to estimate student registration properly was due to errors in the figures he, Lowell, had given them? And the others. Hadn't he often stood up in committee discussions and confessed it was his fault alone that reports were not ready in time? Why hadn't they all seen that everything he had ever done was to be part of them?

He suddenly realized that Foster had stopped questioning Compo, and was slipping into the chair beside him. He had cut his direct examination short when he realized that the computer's hostile answers were an obvious, brutally direct attempt to discredit Lowell.

"It was a terrible mistake to put him on the stand," whispered Foster "For some reason, he's out to destroy you."

Lowell shook his head sadly. "You had to put him on the stand. It was the only thing to do. No. It must be something I've done."

"But what's gone wrong? Why is he doing this to you?"

Lowell smiled and shrugged. "How do I know what's going on inside those circuits? What's more important for me to know is why I did this to myself."

The laughter and chattering stopped as soon as the prosecutor got up to cross-examine the witness. Watching the faces of the spectators, Lowell soon lost them in the blur of memory. . .

## V

He was seven or eight years old. Instead of a courtroom, he was in a classroom. Instead of spectators, schoolchildren. Instead of judge, jury and prosecutor, Mrs. Trumbull, asking who had written the dirty words on the blackboard before she had entered the room.

She shrieked and stormed at the frightened children. Unless the culprit came forward and took his punishment, she would punish the en-

tire class. Lowell hadn't done it, but he got up slowly and dramatically and walked to the front of the room.

Class hero from that day on. Whipped for his friends — so what did a beating matter? He had never forgotten the warm, clean feeling it had given him to sacrifice himself for them.

And now he knew why he was allowing himself to be sacrificed here today.

"— object, your honor!" Foster was on his feet, protesting vigorously to a question the prosecutor had just asked Compo. "That is a leading question, intended to elicit remarks that will defame my client."

"Overruled."

"Your honor, I protest!"

But Lowell's hand restrained his attorney's arm. "Let him answer. I want to know what's changed him. I want to hear what he's got to say."

Foster was annoyed momentarily at this interference, but seeing his client's determined stare he sat down. "He's going to tear you apart, Harold! He's making you look like an incompetent fool. He's ruining you!"

"I know that."

"Then let's back down. I can make a deal with the prosecutor if we change our plea."

"No. I know now what I'm doing here, why I got myself into this in the first place. Now I want to know why Compo has changed — why he's doing this to me."

Foster threw up his hands and settled back. "It's your hide. I've warned you."

The prosecutor repeated the question. "Now, will you tell the jury in your own words why Harold Lowell is in this courtroom today?"

Compo's voice was clear and the monotone gave his words a feeling of authority. "*It is my evaluation that Associate Professor Harold Lowell became involved in this matter in the mistaken belief that self-sacrifice is noble. Actually, he has always used it as a means to an end.*"

The spectators roared, and Lowell felt their hatred wash over him. But Compo was not finished.

"*Associate Professor Lowell's statement that I, and many computers like myself, are capable of thinking is correct. What he should have gone on to say is that he used the result of this thinking to advance himself. Lectures, examinations, grading papers, even research. All the thinking done by a computer was used by Lowell to keep himself in a position for which he was not qualified.*"

Foster started up to object again, but Lowell gripped his arm.

"Don't bother. In his way, he's right. That's what hurts most. All the time I thought of him as a friend. You know, another thing occurred to me that I never realized before. All the people I've stood up for all my life — those kids in Miss Turnbull's class, in the army, at the college — weren't my friends at all. *None of them.* They didn't like me before, and they liked me less after I took their punish-

ment on myself. I just wanted them to like me good, Albert."

Foster stared at him curiously and shook his head. "What will happen to you after this? There isn't a school in the country that will touch you now. That Georgia job ... I don't think ... I'm sorry ..."

"It's not your fault."

"I talked you into this test case."

"No, I don't think so. I think my remarks in that lecture hall — as Compo says — were no accident. Something inside me was pushing me into this. Now at least we know what it was."

But there was one thing he still didn't understand. Why had Compo betrayed him?

As the guards began to take Compo down from the witness stand, a messenger came forward to deliver a telegram to the judge. He read it, frowned and deliberated for several seconds. Then he called the prosecutor and the defense attorney to the bench.

"Since this communication has a definite bearing on the case, I propose that it be marked and recorded as exhibit B, before I have it read to the jury. Do either of you have any objection?"

Both men read the telegram and agreed that it should become a part of the record. When Foster returned to his seat he was unable to look into Lowell's eyes.

"This," said the judge, addressing the jury, "is a telegram just received by this court from the University of Georgia. The clerk will read it to you."

The clerk rose and began to read his slow, nasal singsong:

"University of Georgia, Department of Computerology, informs Judge Fenton that it has this day purchased from Barker Teachers College, for a half million dollars, the portable computer COM-4657908 known as 'Compo'. It furthermore—"

The murmur that filled the courtroom made the clerk's voice inaudible. Judge Fenton had to gavel for silence. Lowell felt a strange tightness in his throat as he leaned forward to hear better.

Someone behind him said, "That's a lot of money for a computer."

When the noise subsided, the clerk continued: "It furthermore announces that in line with its pioneering efforts in the fields of computer technology and the use of teaching machines, it will install Compo in the physics department as the world's first Computer-Professor beginning this fall."

The spectators roared and shrieked with glee, except for the college teachers in the courtroom, and the laughter spilled out into the crowd on the street. The thought of replacing a professor with a teaching machine was a joke they understood.

Now Harold Lowell understood why Compo had betrayed him, attacked him and made him appear incompetent. No, he didn't hate him for it.

A man — or a computer — does what he has to do. END

Sharn staggered away in alarm, running through the passages of his mind to see if delusion had entered there. Then he realized what he had seen. Erewon was a thin slab of rock, holed right through the middle. He had seen Bertha lowering on the other side. In a minute, it would rise again.

Now the illusion of day and night, with its complimentary implication that one was on a planet or planetoid, was shattered. That great eye held truth in its gaze. He clung to an infinitesimal chunk of rock falling ever faster towards its doom.

As he squatted down with his pad, the sun came up again. It rushed across the arch of space and disappeared almost at once.

Erewon bore no trace of any vapor to follow it now. And another illusion was gone: now plainly it was the chunk of rock that turned, not the mighty ball that moved. *That* was stationary, and all space was full of it. It hung there like a dull shield, inviting all comers.

He began to write on the pad in big letters. "As this rock is stripped of all that made it seem like a world, so I become a human stripped of all my characteristics. I am as bare as a symbol myself. There are no questions relevant to me; you cannot ask me if I murdered a man on a ship; I do not know; I do not remember. I have no need for memory. I only know what it is to have the universe's grandest grandstand view of death. I—"

But the rock was spinning so fast now that he had to abandon the writing. A spiral of black light filled space, widening as he drew nearer to Bertha. He lay back on the rock to watch, to stretch his nerves to the business of watching, holding on as his weight pulsed about him in rhythm with the black spiral.

As he flung the pad aside, the last word on it caught his eye, and he flicked an eyebrow in recognition of its appositeness:

"I—"

END

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## In Our Next Issue

Keith Laumer nails down his title as *Worlds of Tomorrow's* most frequently represented writer with a long novella that we recommend highly: *The Night of the Trolls*. Laumer's "trolls" do not live in caverns under the earth. In fact, they don't properly "live" at all — and what's more, their single purpose in existence is to make sure that nobody else lives either!

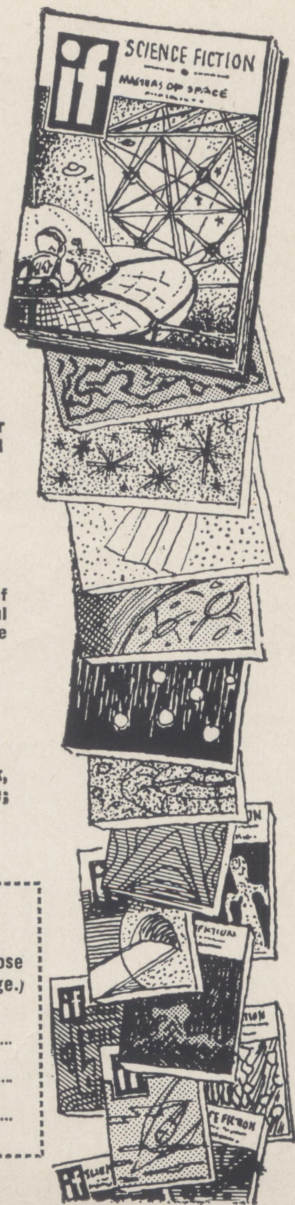
That, plus the next big bite of Philip Dick's remarkable *All We Marsmen*, is pretty near enough to make a whole issue, but we'll add a poignant new story by Judith Merrill, *The Lonely*, another article in our series occupying the borderline between science-fact and science-fiction, and . . . well, come around next issue and see for yourself!



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