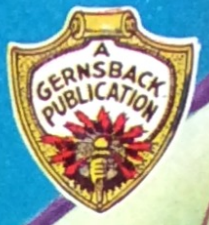


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WONDER STORIES FOR JULY, 1934

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WONDER STORIES are everywhere— If you know where to find them!

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But the short wave fraternity all over the world knows this, and for a few paltry dollars they rig up in their own homes a short wave set which brings in stations from the Antipodes. Such sets cost as low as \$7.20, believe it or not. So if you are looking for real wonder stories, they are in the making right along.

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FOREIGN STATIONS GALORE

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I am using just 45 volts for both detector and audio stage on the plate. What it would do on 90 volts on the audio I do not venture to say.

At the moment 10.35 P.M., I am listening to phone from Japan to Hawaii. No station identification however. Around 10.00 K.C.S. KED—Kashuku Hawaii just identified his station.

HARRY V. DAVER,
 Pamlico, N.C., Canada.

THE WHOLE WORLD

In the past two days I brought in with my Oscilodyne S-W Set the following foreign stations: 13130, DJC (this with the loudspeaker) and a French station which I was unable to identify, but I believe it to be FTA Pontise, and also another German station which I have not been able to identify as yet.

On Wednesday MAJ was weak and noisy and DJC was loud and clear, but on Thursday the conditions were reversed. I have received many United States stations, such as WYXAA, W9XF, W9XK, W9XK, etc., etc.

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Vol. 6, No. 2

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ON THE COVER this month we see a conception of the city of the far future, with which the inhabitants of ancient Atlantis were in constant communication across the veil of time. (From "Voice of Atlantis" by Laurence Manning.) Cover by Paul.

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WONDER STORIES FOR JULY, 1934

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There are many new POPULAR EXPERIMENTS

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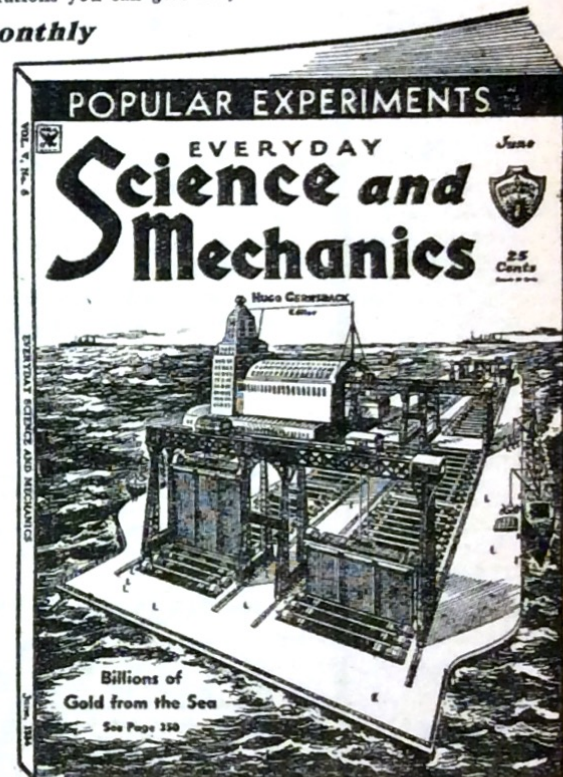
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VOLUME 6

No. 2

**WONDER
 Stories**

JULY

1934

Prophetic Fiction is the Mother of Scientific Fact

HUGO GERNSBACK, *Editor-in-Chief*

CHARLES D. HORNIG, *Managing Editor*

FRANK R. PAUL, *Art Editor*

C. P. MASON, *Associate Editor*

WONDERS OF AUTOMATISM

By HUGO GERNSBACK

FEW things are so enormously complex as animal "automatic" actions, and a huge library could be printed on this subject alone. In the classification of automatic actions, which are continual with us, such as those made by force of habit, those of instinct, those of reflexes, etc., may be put all which take place subconsciously, and for which the normal thought is not required in their execution.

For instance, you feel thirsty. You get up from your chair; you walk to the nearest faucet; you take hold of a glass tumbler; then you open the water faucet and let the water run into the glass until it is full. Then you shut off the water; after which you bring the glass to your lips and drink. Simple as the procedure is, there are several dozen actions in this "simple" automatic performance. In each case, the corresponding nerve center must get an order, which must be executed. Your muscles must respond, in order to lift you from the chair when you get up. Your legs must start to walk. Other commands must be given, as to what direction you shall walk in. If there is an obstruction—a desk or a chair—more commands must be given, so you will walk around it instead of bumping into it. When you come to the faucet, your feet must stop; if not, you will walk into the water cooler. You can carry on from this point; and it is easy to see how many more commands by the nerves must be executed by the muscles before you finally drink the glass of water.

This is an everyday, common activity, but exceedingly complex. If he were to try and reproduce the same actions in a robot machine, it would take an inventor many years to construct a model that could make all the motions of this so-called simple act of drinking a glass of water. I have purposely chosen a simple one; because far more complicated activities can be depicted

by every one quite readily. Thus, for instance, the stenographer who operates a typewriter and writes wholly automatically, never looking at the keyboard; the piano player who reads the notes, reads the music's words and plays without ever being conscious of a keyboard at all; etc., etc.

Into the same category fall the actions produced by instinct which governs, for instance, the entire lives of insects who do practically every act in their whole existence without conscious thinking. It is as though the insect had been trained to do certain acts, in which it takes no conscious part itself; everything being performed automatically by that mysterious power which, for lack of a better term, we name instinct. In the human being, or in the trained animal, automatism is acquired or "conditioned." It comes only by habit. You cannot operate a typewriter or other keyboard machine unless you have learned it by practice. You cannot even get a drink from the water cooler unless you have been taught from infancy how to perform the associated actions. In the insect world, this condition does not prevail; here instinct and habit are INBORN and require no teaching. The young queen bee can lay sufficient eggs to start a new colony. If those eggs are segregated, where no live bee ever comes near them, in time they will hatch out; and the young bees will function just as though they had known all their lives all the business of social organization, of making their marvelous honeycombs, and performing all their duties of a normal beehive. The same is the case with ants, termites, and all other insects who can carry on automatically from birth in the same manner as their grown forebears have always done.

Human beings are not so fortunate. Everything must be learned over again before automatism is acquired.



(Illustration by Paul)

But suddenly things came drifting along—small, transparent spheres, for all the world like glass tennis balls!

A MARTIAN ODYSSEY

By

STANLEY G. WEINBAUM

● Jarvis stretched himself as luxuriously as he could in the cramped general quarters of the *Ares*.

"Air you can breathe!" he exulted. "It feels as thick as soup after the thin stuff out there!" He nodded at the Martian landscape stretching flat and desolate in the light of the nearer moon, beyond the glass of the port.

The other three stared at him sympathetically—Putz, the engineer, Leroy, the biologist, and Harrison the astronomer and captain of the expedition. Dick Jarvis, of course, was chemist of the famous crew, the *Ares* expedition, first human beings to set foot on the mysterious neighbor of the earth, the planet Mars. This, of course, was in the old days, less than twenty years after the mad American Doheny perfected the atomic blast at the cost of his life, and only a decade after the equally mad Car-doza rode on it to the moon. They were true pioneers, these four of the *Ares*. Except for a half-dozen moon expeditions and the ill-fated de Lancey flight aimed at the seductive orb of Venus, they were the first men to feel other gravity than earth's, and certainly the first successful crew to leave the earth-moon system. And they deserved that success when one considers the difficulties and discomforts—the months spent in acclimatization chambers back on earth, learning to breathe air as tenuous as that of Mars, the challenging of the void in the tiny rocket driven by the cranky reaction motors of the twenty-first century, and mostly the facing of an absolutely unknown world.

● It is a most curious thing, and no doubt one of the greatest wonders of our wonder stories, that practically all authors have an idea that future explorers will step into another world and find conditions like they are on earth. They picture human beings with two feet and two legs, two eyes, etc., just as we have them here, although the chances are not one in a million that such conditions will even remotely prevail. Biologists are pretty much unanimous on this point, and feel that if there is such a thing as intelligent life on Mars or Venus, it certainly will be radically different from the human life that we know here.

On our own earth, we find the most grotesque animals and the most grotesque insects, some of which, like the ants, are endowed with extraordinary intelligence. Imagine a human being, reduced to the size of an ant, being brought into an ant hill and what his chances would be to really understand what was going on. It might take him years before he would even get an inkling as to what it was all about.

Our present author, fully conscious of this thought, has written a science-fiction tale so new, so breezy, that it stands out head and shoulders over similar interplanetary stories. The mere fact that he keeps you guessing is the main charm of the story, and this, coupled with the lighter vein in which it is written, makes it all the more charming.

We are prevailing upon the author to let us have a sequel, which we hope to present soon.

Jarvis stretched again and fingered the raw and peeling tip of his frost-bitten nose. He sighed again contentedly.

"Well," exploded Harrison abruptly, "are we going to hear what happened? You set out all shipshape in an auxiliary rocket, we don't get a peep for ten days, and finally Putz here picks you out of a lunatic ant-heap with a freak ostrich as your pal! Spill it, man!"

"'Speel'?" queried Leroy perplexedly. "Speel what?"

"He means '*spiel*,'" explained Putz soberly. "It iss to tell."

Jarvis met Harrison's amused glance without the shadow of a smile. "That's right, Karl," he said in grave agreement with Putz. "*Ich spiel es!*" He grunted comfortably and began.

"According to orders," he said, "I watched Karl here take off toward the North, and then I got into my flying sweat-box and headed South. You'll remember, Cap—we had orders not to land, but just scout about for points of interest. I set the two cameras clicking and buzzed along, riding pretty high—about two thousand feet—for a couple of reasons. First, it gave the cameras a greater field, and second, the under-jets travel so far in this half-vacuum they call air here that they stir up dust if you move low."

"We know all that from Putz," grunted Harrison. "I wish you'd saved the films, though. They'd have paid the cost of this junket; remember how the public mobbed the first moon pictures?"

"The films are safe," retorted Jarvis. "Well," he resumed, "as I said, I buzzed along at a pretty good clip; just as we figured, the wings haven't much lift in this air at less than a hundred miles per hour, and even then I had to use the under-jets.

"So, with the speed and the altitude and the blurring caused by the under-jets, the seeing wasn't any too good. I could see enough, though, to distinguish that what I sailed over was just more of this grey plain that we'd been examining the whole week since our landing—same blobby growths and same eternal carpet of crawling little plant-animals, or bio-pods, as Leroy calls them. So I sailed along, calling back my position every hour as instructed, and not knowing whether you heard me."

"I did!" snapped Harrison.

"A hundred and fifty miles south," continued Jarvis imperturbably, "the sur-

face changed to a sort of low plateau, nothing but desert and orange-tinted sand. I figured that we were right in our guess, then, and this grey plain we dropped on was really the Mare Cimmerium which would make my orange desert the region called Xanthus. If I were right, I ought to hit another grey plain, the Mare Chronium in another couple of hundred miles, and then another orange desert, Thyle I or II. And so I did."

"Putz verified our position a week and a half ago!" grumbled the captain. "Let's get to the point."

"Coming!" remarked Jarvis. "Twenty miles into Thyle—believe it or not—I crossed a canal!"

"Putz photographed a hundred! Let's hear something new!"

"And did he also see a city?"

"Twenty of 'em, if you call those heaps of mud cities!"

"Well," observed Jarvis, "from here on I'll be telling a few things Putz didn't see!" He rubbed his tingling nose, and continued. "I knew that I had sixteen hours of daylight at this season, so eight hours—eight hundred miles—from here, I decided to turn back. I was still over Thyle, whether I or II I'm not sure, not more than twenty-five miles into it. And right there, Putz's pet motor quit!"

"Qvit? How?" Putz was solicitous.

"The atomic blast got weak. I started losing altitude right away, and suddenly there I was with a thump right in the middle of Thyle! Smashed my nose on the window, too!" He rubbed the injured member ruefully.

"Did you maybe try vashing der combustion chamber mit acid sulphuric?" inquired Putz. "Sometimes der lead giff a secondary radiation—"

"Naw!" said Jarvis disgustedly. "I wouldn't try that, of course—not more than ten times! Besides, the bump flattened the landing gear and busted off the under-jets. Suppose I got the thing working—what then? Ten miles with the blast coming right out of the bottom and I'd have melted the floor from under me!"

He rubbed his nose again. "Lucky for me a pound only weighs seven ounces here, or I'd have been mashed flat!"

"I could have fixed!" ejaculated the engineer. "I bet it was not serious."

"Probably not," agreed Jarvis sarcastically. "Only it wouldn't fly. Nothing serious, but I had my choice of waiting to be picked up or trying to walk back—eight hundred miles, and perhaps twenty days before we had to leave! Forty miles a day! Well," he concluded, "I chose to walk. Just as much chance of being picked up, and it kept me busy."

"We'd have found you," said Harrison.

"No doubt. Anyway, I rigged up a harness from some seat straps, and put the water tank on my back, took a cartridge belt and revolver, and some iron rations, and started out."

"Water tank!" exclaimed the little biologist, Leroy. "She weigh one-quarter ton!"

"Wasn't full. Weighed about two hundred and fifty pounds earth-weight, which is eighty-five here. Then, besides, my own personal two hundred and ten pounds is only seventy on Mars, so, tank and all, I grossed a hundred and fifty-five, or fifty-five pounds less than my everyday earth-weight. I figured on that when I undertook the forty-mile daily stroll. Oh—of course I took a thermo-skin sleeping bag for these wintry Martian nights.

● "Off I went, bouncing along pretty quickly. Eight hours of daylight meant twenty miles or more. It got tiresome, of course—plugging along over a soft sand desert with nothing to see, not even Leroy's crawling biopods. But an hour or so brought me to the canal—just a dry ditch about four hundred feet wide, and straight as a railroad on its own company map.

"There'd been water in it sometime, though. The ditch was covered with what looked like a nice green lawn. Only, as I approached, the lawn moved out of my way!"

"Eh?" said Leroy.

"Yeah; it was a relative of your biopods. I caught one—a little grass-like blade about as long as my finger, with two thin, stemmy legs."

"He is where?" Leroy was eager.

"He is let go! I had to move, so I plowed along with the walking grass opening in front and closing behind. And then I was out on the orange desert of Thyle again.

"I plugged doggedly along, cussing the sand that made going so tiresome, and, incidentally, cussing that cranky motor of yours, Karl. It was just before twilight that I reached the edge of Thyle, and looked down over the gray Mare Chronium. And I knew there was seventy-five miles of *that* to be walked over, and then a couple of hundred miles of that Xanthus desert, and about as much more Mare Cimmerium. Was I pleased? I started cussing you fellows for not picking me up!"

"We were trying, you sap!" said Harrison.

"That didn't help. Well, I figured I might as well use what was left of daylight in getting down the cliff that bounded Thyle. I found an easy place, and down I went. Mare Chronium was just the same sort of place as this—crazy leafless plants and a bunch of crawlers; I gave it a glance and hauled out my sleeping bag. Up to that time, you know, I hadn't seen anything worth worrying about on this half-dead world—nothing dangerous, that is."

"Did you?" queried Harrison.

"*Did I!* You'll hear about it when I come to it. Well, I was just about to turn in when suddenly I heard the wildest sort of shenanigans!"

"Vot iss shenanigans?" inquired Putz.

"He say, '*Je ne sais quoi*,'" explained Leroy. "It is to say, 'I don't know what'."

"That's right," agreed Jarvis. "I didn't know what, so I sneaked over to find out. There was a racket like a flock of crows eating a bunch of canaries—whistles, cackles, caws, trills, and what have you."

I rounded a clump of stumps, and there was Tweel!"

"Tweel?" said Harrison, and "Tveel?" said Leroy and Putz.

"That freak ostrich," explained the narrator. "At least, Tweel is as near as I can pronounce it without sputtering. He called it something like 'Trrrweerrlll'."

"What was he doing?" asked the Captain.

"He was being eaten! And squealing, of course, as any one would."

"Eaten! By what?"

"I found out later. All I could see then was a bunch of black ropy arms tangled around what looked like, as Putz described it to you, an ostrich. I wasn't going to interfere, naturally; if both creatures were dangerous, I'd have one less to worry about.

"But the bird-like thing was putting up a good battle, dealing vicious blows with an eighteen-inch beak, between screeches. And besides, I caught a glimpse or two of what was on the end of those arms!" Jarvis shuddered. "But the clincher was when I noticed a little black bag or case hung about the neck of the bird-thing! It was intelligent! That or tame, I assumed. Anyway, it clinched my decision. I pulled out my automatic and fired into what I could see of its antagonist.

"There was a flurry of tentacles and a spurt of black corruption, and then the thing, with a disgusting sucking noise, pulled itself and its arms into a hole in the ground. The other let out a series of clacks, staggered around on legs about as thick as golf sticks, and turned suddenly to face me. I held my weapon ready, and the two of us stared at each other.

"The Martian wasn't a bird, really. It wasn't even bird-like, except just at first glance. It had a beak all right, and a few feathery appendages, but the beak wasn't really a beak. It was somewhat flexible; I could see the tip bend slowly from side to side; it was almost like a cross between a beak and a trunk. It had four-toed feet, and four fingered things—hands, you'd have to call them, and a little roundish body, and a long neck ending in a tiny

head—and that beak. It stood an inch or so taller than I, and—well, Putz saw it!"

The engineer nodded. "Yah! I saw!"

CHAPTER II

Tweel of Mars

● Jarvis continued. "So—we stared at each other. Finally the creature went into a series of clackings and twitterings and held out its hands toward me, empty. I took that as a gesture of friendship."

"Perhaps," suggested Harrison, "it looked at that nose of yours and thought you were its brother!"

"Huh! You can be funny without talking! Anyway, I put up my gun and said, 'Aw, don't mention it,' or something of the sort, and the thing came over and we were pals.

"By that time, the sun was pretty low and I knew that I'd better build a fire or get into my thermo-skin. I decided on the fire. I picked a spot at the base of the Thyle cliff, where the rock could reflect a little heat on my back. I started breaking off chunks of this desiccated Martian vegetation, and my companion caught the idea and brought in an armful. I reached for a match, but the Martian fished into his pouch and brought out something that looked like a glowing coal; one touch of it, and the fire was blazing—and you all know what a job we have starting a fire in this atmosphere!

"And that bag of his!" continued the narrator. "That was a manufactured article, my friends; press an end and she popped open—press the middle, and she sealed so perfectly you couldn't see the line. Better than zippers.

"Well, we stared at the fire a while and I decided to attempt some sort of communication with the Martian. I pointed at myself and said 'Dick'; he caught the drift immediately, stretched a bony claw at me and repeated 'Tick.' Then I pointed at him, and he gave that whistle I called Tweel; I can't imitate his accent. Things were going smoothly; to emphasize the names, I repeated 'Dick,' and then, pointing at him, 'Tweel.'

"There we stuck! He gave some clacks that sounded negative, and said something like 'P-p-p-prot.' And that was just the beginning; I was always 'Tick,' but as for him—part of the time he was 'Tweel,' and part of the time he was 'P-p-p-prot,' and part of the time he was sixteen other noises!

"We just couldn't connect! I tried 'rock,' and I tried 'star,' and 'tree,' and 'fire,' and Lord knows what else, and try as I would, I couldn't get a single word! Nothing was the same for two successive minutes, and if that's a language, I'm an alchemist! Finally I gave it up and called him Tweel, and that seemed to do.

"But Tweel hung on to some of my words. He remembered a couple of them, which I suppose is a great achievement if you're used to a language you have to make up as you go along. But I couldn't get the hang of his talk; either I missed some subtle point or we just didn't *think* alike—and I rather believe the latter view.

"I've other reasons for believing that. After a while I gave up the language business, and tried mathematics. I scratched two plus two equals four on the ground, and demonstrated it with pebbles. Again Tweel caught the idea, and informed me that three plus three equals six. Once more we seemed to be getting somewhere.

"So, knowing that Tweel had at least a grammar school education, I drew a circle for the sun, pointing first at it, and then at the last glow of the sun. Then I sketched in Mercury, and Venus, and Mother Earth, and Mars, and finally, pointing to Mars, I swept my hand around in a sort of inclusive gesture to indicate that Mars was our current environment. I was working up to putting over the idea that my home was on the earth.

"Tweel understood my diagram all right. He poked his beak at it, and with a great deal of trilling and clucking, he added Deimos and Phobos to Mars, and then sketched in the earth's moon!

"Do you see what that proves? It

proves that Tweel's race uses telescopes—that they're civilized!"

"Does not!" snapped Harrison. "The moon is visible from here as a fifth magnitude star. They could see its revolution with the naked eye."

"The moon, yes!" said Jarvis. "You've missed my point. Mercury isn't visible! And Tweel knew of Mercury because he placed the Moon at the *third* planet, not the second. If he didn't know Mercury, he'd put the earth second, and Mars third, instead of fourth! See?"

"Humph!" said Harrison.

"Anyway," proceeded Jarvis, "I went on with my lesson. Things were going smoothly, and it looked as if I could put the idea over. I pointed at the earth on my diagram, and then at myself, and then, to clinch it, I pointed to myself and then to the earth itself shining bright green almost at the zenith.

"Tweel set up such an excited clacking that I was certain he understood. He jumped up and down, and suddenly he pointed at himself and then at the sky, and then at himself and at the sky again. He pointed at his middle and then at Arcturus, at his head and then at Spica, at his feet and then at half a dozen stars, while I just gaped at him. Then, all of a sudden, he gave a tremendous leap. Man, what a hop! He shot straight up into the starlight, seventy-five feet if an inch! I saw him silhouetted against the sky, saw him turn and come down at me head first, and land smack on his beak like a javelin! There he stuck square in the center of my sun-circle in the sand—a bull's-eye!"

"Nuts!" observed the captain. "Plain nuts!"

"That's what I thought, too! I just stared at him open-mouthed while he pulled his head out of the sand and stood up. Then I figured he'd missed my point, and I went through the whole blamed rigmarole again, and it ended the same way, with Tweel on his nose in the middle of my picture!"

"Maybe it's a religious rite," suggested Harrison.

"Maybe," said Jarvis dubiously. "Well, there we were. We could exchange ideas up to a certain point, and then—blooey! Something in us was different, unrelated; I don't doubt that Tweel thought me just as screwy as I thought him. Our minds simply looked at the world from different viewpoints, and perhaps his viewpoint is as true as ours. But—we couldn't get together, that's all. Yet, in spite of all difficulties, I *liked* Tweel, and I have a queer certainty that he liked me."

● "Nuts!" repeated the captain. "Just daffy!"

"Yeah? Wait and see. A couple of times I've thought that perhaps we—" He paused, and then resumed his narrative. "Anyway, I finally gave it up, and got into my thermo-skin to sleep. The fire hadn't kept me any too warm, but that damn sleeping bag did. Got stuffy five minutes after I closed myself in. I opened it a little and bingo! Some eighty-below-zero air hit my nose, and that's when I got this pleasant little frostbite to add to the bump I acquired during the crash of my rocket.

"I don't know what Tweel made of my sleeping. He sat around, but when I woke up, he was gone. I'd just crawled out of my bag, though, when I heard some twittering, and there he came, sailing down from that three-story Thyle cliff to alight on his beak beside me. I pointed to myself and toward the north, and he pointed at himself and toward the south, but when I loaded up and started away, he came along.

"Man, how he traveled!—a hundred and fifty feet at a jump, sailing through the air stretched out like a spear, and landing on his beak. He seemed surprised at my plodding, but after a few moments he fell in beside me, only every few minutes he'd go into one of his leaps, and stick his nose into the sand a block ahead of me. Then he'd come shooting back at me; it kept me nervous at first to see that beak of his coming at me like a spear, but he always ended in the sand at my side.

"So the two of us plugged along across

the Mare Chronium. Same sort of place as this—same crazy plants and same little green biopods growing in the sand, or crawling out of your way. We talked—not that we understood each other, you know, but just for company. I sang songs, and I suspect Tweel did too; at least, some of his trillings and twitterings had a subtle sort of rhythm.

"Then, for variety, Tweel would display his smattering of English words. He'd point to an outcropping and say 'rock,' and point to a pebble and say it again; or he'd touch my arm and say 'Tick,' and then repeat it. He seemed terrifically amused that the same word meant the same thing twice in succession, or that the same word could apply to two different objects. It set me wondering if perhaps his language wasn't like the primitive speech of some earth people—you know, Captain, like the Negritoes, for instance, who haven't any generic words. No word for food or water or man—words for good food and bad food, or rain water and sea water, or strong man and weak man—but no names for general classes. They're too primitive to understand that rain water and sea water are just different aspects of the same thing. But that wasn't the case with Tweel; it was just that we were somehow mysteriously different—our minds were alien to each other. And yet—we *liked* each other!"

"Looney, that's all," remarked Harrison. "That's why you two were so fond of each other."

"Well, I like *you!*" countered Jarvis wickedly. "Anyway," he resumed, "don't get the idea that there was anything screwy about Tweel. In fact, I'm not so sure but that he couldn't teach our highly praised human intelligence a trick or two. Oh, he wasn't an intellectual superman, I guess; but don't overlook the point that he managed to understand a little of my mental workings, and I never even got a glimmering of his."

"Because he didn't have any!" suggested the captain, while Putz and Leroy blinked attentively.

"You can judge of that when I'm through," said Jarvis. "Well, we plugged along across the Mare Chronium all that day, and all the next. Mare Chronium—Sea of Time! Say, I was willing to agree with Schiaparelli's name by the end of that march! Just that grey, endless plain of weird plants, and never a sign of any other life. It was so monotonous that I was even glad to see the desert of Xanthus toward the evening of the second day.

"I was fair worn out, but Tweel seemed as fresh as ever, for all I never saw him drink or eat. I think he could have crossed the Mare Chronium in a couple of hours with those block-long nose dives of his, but he stuck along with me. I offered him some water once or twice; he took the cup from me and sucked the liquid into his beak, and then carefully squirted it all back into the cup and gravely returned it.

"Just as we sighted Xanthus, or the cliffs that bounded it, one of those nasty sand clouds blew along, not as bad as the one we had here, but mean to travel against. I pulled the transparent flap of my thermo-skin bag across my face and managed pretty well, and I noticed that Tweel used some feathery appendages growing like a mustache at the base of his beak to cover his nostrils, and some similar fuzz to shield his eyes."

● "He is desert creature!" ejaculated the little biologist, Leroy.

"Huh? Why?"

"He drink no water—he is adapt' for sand storm—"

"Proves nothing! There's not enough water to waste anywhere on this desiccated pill called Mars. We'd call all of it desert on earth, you know." He paused.

"Anyway, after the sand storm blew over, a little wind kept blowing in our faces, not strong enough to stir the sand. But suddenly things came drifting along from the Xanthus cliffs—small, transparent spheres, for all the world like glass tennis balls! But light—they were almost light enough to float even in this thin air—

empty, too; at least, I cracked open a couple and nothing came out but a bad smell. I asked Tweel about them, but all he said was 'No, no, no,' which I took to mean that he knew nothing about them. So they went bouncing by like tumbleweeds, or like soap bubbles, and we plugged on toward Xanthus. Tweel pointed at one of the crystal balls once and said 'rock,' but I was too tired to argue with him. Later I discovered what he meant.

"We came to the bottom of the Xanthus cliffs finally, when there wasn't much daylight left. I decided to sleep on the plateau if possible; anything dangerous, I reasoned, would be more likely to prowl through the vegetation of the Mare Chronium than the sand of Xanthus. Not that I'd seen a single sign of menace, except the rope-armed black thing that had trapped Tweel, and apparently that didn't prowl at all, but lured its victims within reach. It couldn't lure me while I slept, especially as Tweel didn't seem to sleep at all, but simply sat patiently around all night. I wondered how the creature had managed to trap Tweel, but there wasn't any way of asking him. I found that out too, later; it's devilish!

"However, we were ambling around the base of the Xanthus barrier looking for an easy spot to climb. At least, I was. Tweel could have leaped it easily, for the cliffs were lower than Thyle—perhaps sixty feet. I found a place and started up, swearing at the water tank strapped to my back—it didn't bother me except when climbing—and suddenly I heard a sound that I thought I recognized!

"You know how deceptive sounds are in this thin air. A shot sounds like the pop of a cork. But this sound was the drone of a rocket, and sure enough, there went our second auxiliary about ten miles to westward, between me and the sunset!"

"Vas me!" said Putz. "I hunt for you."

"Yeah; I knew that, but what good did it do me? I hung on to the cliff and yelled and waved with one hand. Tweel saw it too, and set up a trilling and twit-

tering, leaping to the top of the barrier and then high into the air. And while I watched, the machine droned on into the shadows to the south.

"I scrambled to the top of the cliff. Tweel was still pointing and trilling excitedly, shooting up toward the sky and coming down head-on to stick upside down on his beak in the sand. I pointed toward the south and at myself, and he said, 'Yes—Yes—Yes'; but somehow I gathered that he thought the flying thing was a relative of mine, probably a parent. Perhaps I did his intellect an injustice; I think now that I did.

"I was bitterly disappointed by the failure to attract attention. I pulled out my thermo-skin bag and crawled into it, as the night chill was already apparent. Tweel stuck his beak into the sand and drew up his legs and arms and looked for all the world like one of those leafless shrubs out there. I think he stayed that way all night."

"Protective mimicry!" ejaculated Leroy. "See? He is desert creature!"

CHAPTER III

The Pyramid Being

● "In the morning," resumed Jarvis, "we started off again. We hadn't gone a hundred yards into Xanthus when I saw something queer! This is one thing Putz didn't photograph, I'll wager!

"There was a line of little pyramids—tiny ones, not more than six inches high, stretching across Xanthus as far as I could see! Little buildings made of pygmy bricks, they were, hollow inside and truncated, or at least broken at the top and empty. I pointed at them and said 'What?' to Tweel, but he gave some negative twitters to indicate, I suppose, that he didn't know. So off we went, following the row of pyramids because they ran north, and I was going north.

"Man, we trailed that line for hours! After a while, I noticed another queer thing: they were getting larger. Same number of bricks in each one, but the bricks were larger.

"By noon they were shoulder high. I looked into a couple—all just the same, broken at the top and empty. I examined a brick or two as well; they were silica, and old as creation itself!"

"How you know?" asked Leroy.

"They were weathered—edges rounded. Silica doesn't weather easily even on earth, and in this climate—!"

"How old you think?"

"Fifty thousand—a hundred thousand years. How can I tell? The little ones we saw in the morning were older—perhaps ten times as old. Crumbling. How old would that make *them*? Half a million years? Who knows?" Jarvis paused a moment. "Well," he resumed, "we followed the line. Tweel pointed at them and said 'rock' once or twice, but he'd done that many times before. Besides, he was more or less right about these.

"I tried questioning him. I pointed at a pyramid and asked 'People?' and indicated the two of us. He set up a negative sort of clucking and said, 'No, no, no. No one-one-two. No two-two-four,' meanwhile rubbing his stomach. I just stared at him and he went through the business again. 'No one-one-two. No two-two-four.' I just gaped at him."

"That proves it!" exclaimed Harrison. "Nuts!"

"You think so?" queried Jarvis sardonically. "Well, I figured it out different! 'No one-one-two! You don't get it, of course, do you?'"

"Nope—nor do you!"

"I think I do! Tweel was using the few English words he knew to put over a very complex idea. What, let me ask, does mathematics make you think of?"

"Why—of astronomy. Or—or logic!"

"That's it! 'No one-one-two!' Tweel was telling me that the builders of the pyramids weren't people!—or that they weren't intelligent, that they weren't reasoning creatures! Get it?"

"Huh! I'll be damned!"

"You probably will."

"Why," put in Leroy, "he rub his belly?"

"Why? Because, my dear biologist,

that's where his brains were! Not in his tiny head—in his middle!"

"*C'est impossible!*"

"Not on Mars, it isn't! This flora and fauna aren't earthly; your biopods prove that!" Jarvis grinned and took up his narrative. "Anyway, we plugged along across Xanthus and in about the middle of the afternoon, something else queer happened. The pyramids ended."

"Ended!"

"Yeah; the queer part was that the last one—and now they were ten-footers—was capped! See? Whatever built it was still inside; we'd trailed 'em from their half-million-year-old origin to the present.

"Tweel and I both noticed it about the same time. I yanked out my automatic (I had a clip of Boland explosive bullets in it) and Tweel, quick as a sleight-of-hand trick, snapped a queer little glass revolver out of his bag. It was much like our weapons, except that the grip was larger to accommodate his four-taloned hand. And we held our weapons ready while we sneaked up along the lines of empty pyramids.

"Tweel saw the movement first. The top tiers of bricks were heaving, shaking, and suddenly slid down the sides with a thin crash. And then—something—something was coming out!

"A long, silver-grey arm appeared, dragging after it an armored body. Armored, I mean, with scales, silver-grey and dull-shining. The arm heaved the body out of the hole; the beast crashed to the sand.

"It was a nondescript creature—body like a big grey cask, arm and a sort of mouth-hole at one end; stiff, pointed tail at the other—and that's all. No other limbs, no eyes, ears, nose — nothing! The thing dragged itself a few yards, inserted its pointed tail in the sand, pushed itself upright, and just sat.

● "Tweel and I watched it for ten minutes before it moved. Then, with a creaking and rustling like—oh, like crumpling stiff paper—its arm moved to the mouth-hole and out came a brick! The

arm placed the brick carefully on the ground, and the thing was still again.

"Another ten minutes—another brick. Just one of Nature's bricklayers. I was about ready to slip away and move on when Tweel pointed at the thing and said 'rock'! I went 'huh?' and he said it again. Then, to the accompaniment of some of his trilling, he said, 'No—no—,' and gave two or three whistling breaths.

"Well, I got his meaning, for a wonder! I said, 'No breath?' and demonstrated the word. Tweel was ecstatic; he said, 'Yes, yes, yes! No, no, no breet!' Then he gave a leap and sailed out to land on his nose about one pace from the monster!

"I was startled, you can imagine! The arm was going up for a brick, and I expected to see Tweel caught and mangled, but—nothing happened! Tweel pounded on the creature, and the arm took the brick and placed it neatly beside the first. Tweel rapped on its body again, and said 'rock,' and I got up nerve enough to take a look myself.

"Tweel was right again. The creature *was* rock, and it didn't breathe!"

"How you know?" snapped Leroy, his black eyes blazing interest.

"Because I'm a chemist. The beast was made of silica! There must have been pure silicon in the sand, and it lived on that. Get it? We, and Tweel, and those plants out there, and even the biopods are *carbon* life; this thing lived by a different set of chemical reactions. It was silicon life!"

"*La vie silicieuse!*" shouted Leroy. "I have suspect, and now it is proof! I must go see! *Il faut que je—*"

"All right! All right!" said Jarvis. "You can go see. Anyhow, there the thing was, alive and yet not alive, moving every ten minutes, and then only to remove a brick. Those bricks were its waste matter. See, Frenchy? We're carbon, and our waste is carbon dioxide, and this thing is silicon, and *its* waste is silicon dioxide — silica. But silica is a solid, hence the bricks. And it built itself in, and when it was covered, it moved over to a fresh place to start over. No wonder it creaked! A living creature half a million years old!"

"How you know how old?" Leroy was frantic.

"We trailed its pyramids from the beginning, didn't we? If this weren't the original pyramid builder, the series would have ended somewhere before we found him, wouldn't it?—ended and started over with the small ones. That's simple enough, isn't it?"

"But he reproduces, or tries to. Before the third brick came out, there was a little rustle and out popped a whole stream of those little crystal balls. They're his spores, or eggs, or seeds—call 'em what you want. They went bouncing by across Xanthus just as they'd bounced by us back in the Mare Chronium. I've a hunch how they work, too—this is for your information, Leroy. I think the crystal shell of silica is no more than a protective covering, like an eggshell, and that the active principle is the smell inside. It's some sort of gas that attacks silicon, and if the shell is broken near a supply of that element, some reaction starts that ultimately develops into a beast like that one."

"You should try!" exclaimed the little Frenchman. "We must break one to see!"

"Yeah? Well, I did. I smashed a couple against the sand. Would you like to come back in about ten thousand years to see if I planted some pyramid monsters? You'd most likely be able to tell by that time!" Jarvis paused and drew a deep breath. "Lord! That queer creature! Do you picture it? Blind, deaf, nerveless, brainless—just a mechanism, and yet—immortal! Bound to go on making bricks, building pyramids, as long as silicon and oxygen exist, and even afterwards it'll just stop. It won't be dead. If the accidents of a million years bring it its food again, there it'll be, ready to run again, while brains and civilizations are part of the past. A queer beast—yet I met a stranger one!"

"If you did, it must have been in your dreams!" growled Harrison.

"You're right!" said Jarvis soberly. "In a way, you're right. The dream-beast! That's the best name for it—and it's the most fiendish, terrifying creation one

could imagine! More dangerous than a lion, more insidious than a snake!"

"Tell me!" begged Leroy. "I must go see!"

"Not *this* devil!" He paused again. "Well," he resumed, "Tweel and I left the pyramid creature and plowed along through Xanthus. I was tired and a little disheartened by Putz's failure to pick me up, and Tweel's trilling got on my nerves, as did his flying nosedives. So I just strode along without a word, hour after hour across that monotonous desert.

"Toward mid-afternoon we came in sight of a low dark line on the horizon. I knew what it was. It was a canal; I'd crossed it in the rocket and it meant that we were just one-third of the way across Xanthus. Pleasant thought, wasn't it? And still, I was keeping up to schedule.

"We approached the canal slowly; I remembered that this one was bordered by a wide fringe of vegetation and that Mud-heap City was on it."

CHAPTER IV

The Dream-Beast

● "I was tired, as I said. I kept thinking of a good hot meal, and then from that I jumped to reflections of how nice and home-like even Borneo would seem after this crazy planet, and from that, to thoughts of little old New York, and then to thinking about a girl I know there—Fancy Long. Know her?"

"'Vision entertainer,'" said Harrison. "I've tuned her in. Nice blonde—dances and sings on the *Yerba Mate* hour."

"That's her," said Jarvis ungrammatically. "I know her pretty well — just friends, get me?—though she came down to see us off in the *Ares*. Well, I was thinking about her, feeling pretty lonesome, and all the time we were approaching that line of rubbery plants.

"And then—I said, 'What 'n hell!' and stared. And there she was—Fancy Long, standing plain as day under one of those crack-brained trees, and smiling and waving just the way I remembered her when we left!"

"Now you're nuts, too!" observed the captain.

"Boy, I almost agreed with you! I stared and pinched myself and closed my eyes and then stared again—and every time, there was Fancy Long smiling and waving! Tweel saw something, too; he was trilling and clucking away, but I scarcely heard him. I was bounding toward her over the sand, too amazed even to ask myself questions.

"I wasn't twenty feet from her when Tweel caught me with one of his flying leaps. He grabbed my arm, yelling, 'No—no—no!' in his squeaky voice. I tried to shake him off—he was as light as if he were built of bamboo—but he dug his claws in and yelled. And finally some sort of sanity returned to me and I stopped less than ten feet from her. There she stood, looking as solid as Putz's head!"

"Vot?" said the engineer.

"She smiled and waved, and waved and smiled, and I stood there dumb as Leroy, while Tweel squeaked and chattered. I *knew* it couldn't be real, yet—there she was!

"Finally I said, 'Fancy! Fancy Long!' She just kept on smiling and waving, but looking as real as if I hadn't left her thirty-seven million miles away.

"Tweel had his glass pistol out, pointing it at her. I grabbed his arm, but he tried to push me away. He pointed at her and said, 'No breet! No breet!', and I understood that he meant that the Fancy Long thing wasn't alive. Man, my head was whirling!

"Still, it gave me the jitters to see him pointing his weapon at her. I don't know why I stood there watching him take careful aim, but I did. Then he squeezed the handle of his weapon; there was a little puff of steam, and Fancy Long was gone! And in her place was one of those writhing, black, rope-armed horrors like the one I'd saved Tweel from!

"The dream-beast! I stood there dizzy, watching it die while Tweel trilled and whistled. Finally he touched my arm, pointed at the twisting thing, and said, 'You one-one-two, he one-one-two.' After

he'd repeated it eight or ten times, I got it. Do any of you?"

"Oui!" shrilled Leroy. "*Moi—je le comprends!* He mean you think of something, the beast he know, and you see it! *Un chien*—a hungry dog, he would see the big bone with meat! Or smell it—not?"

"Right!" said Jarvis, "The dream-beast uses its victim's longings and desires to trap its prey. The bird at nesting season would see its mate, the fox, prowling for its own prey, would see a helpless rabbit!"

"How he do?" queried Leroy.

"How do I know? How does a snake back on earth charm a bird into its very jaws? And aren't there deep-sea fish that lure their victims into their mouths? Lord!" Jarvis shuddered. "Do you see how insidious the monster is? We're warned now—but henceforth we can't trust even our eyes. You might see me—I might see one of you—and back of it may be nothing but another of those black horrors!"

"How'd your friend know?" asked the captain abruptly.

"Tweel? I wonder! Perhaps he was thinking of something that couldn't possibly have interested me, and when I started to run, he realized that I saw something different and was warned. Or perhaps the dream-beast can only project a single vision, and Tweel saw what I saw—or nothing. I couldn't ask him. But it's just another proof that his intelligence is equal to ours or greater."

"He's daffy, I tell you!" said Harrison. "What makes you think his intellect ranks with the human?"

"Plenty of things! First, the pyramid-beast. He hadn't seen one before; he said as much. Yet he recognized it as a dead-alive automaton of silicon."

"He could have heard of it," objected Harrison. "He lives around here, you know."

● "Well, how about the language? I couldn't pick up a single idea of his and he learned six or seven words of mine. And do you realize what complex ideas he

put over with no more than those six or seven words? The pyramid-monster—the dream-beast! In a single phrase he told me that one was a harmless automaton and the other a deadly hypnotist. What about that?”

“Huh!” said the captain.

“*Huh* if you wish! Could you have done it knowing only six words of English? Could you go even further, as Tweel did, and tell me that another creature was of a sort of intelligence so different from ours that understanding was impossible—even more impossible than that between Tweel and me?”

“Eh? What was that?”

“Later. The point I’m making is that Tweel and his race are worthy of our friendship. Somewhere on Mars — and you’ll find I’m right—is a civilization and culture equal to ours, and maybe more than equal. And communication is possible between them and us; Tweel proves that. It may take years of patient trial, for their minds are alien, but less alien than the next minds we encountered—if they *are* minds.”

“The next ones? What next ones?”

“The people of the mud cities along the canals.” Jarvis frowned, then resumed his narrative. “I thought the dream-beast and the silicon-monster were the strangest beings conceivable, but I was wrong. These creatures are still more alien, less understandable than either and far less comprehensible than Tweel, with whom friendship is possible, and even, by patience and concentration, the exchange of ideas.

“Well,” he continued, “we left the dream-beast dying, dragging itself back into its hole, and we moved toward the canal. There was a carpet of that queer walking-grass scampering out of our way, and when we reached the bank, there was a yellow trickle of water flowing. The mound city I’d noticed from the rocket was a mile or so to the right and I was curious enough to want to take a look at it.

“It had seemed deserted from my previous glimpse of it, and if any creatures

were lurking in it—well, Tweel and I were both armed. And by the way, that crystal weapon of Tweel’s was an interesting device; I took a look at it after the dream-beast episode. It fired a little glass splinter, poisoned, I suppose, and I guess it held at least a hundred of ’em to a load. The propellant was steam — just plain steam!”

“Shteam!” echoed Putz. “From vot come shteam?”

“From water, of course! You could see the water through the transparent handle, and about a gill of another liquid, thick and yellowish. When Tweel squeezed the handle—there was no trigger—a drop of water and a drop of the yellow stuff squirted into the firing chamber, and the water vaporized—pop!—like that. It’s not so difficult; I think we could develop the same principle. Concentrated sulphuric acid will heat water almost to boiling, and so will quicklime, and there’s potassium and sodium—

“Of course, his weapon hadn’t the range of mine, but it wasn’t so bad in this thin air, and it *did* hold as many shots as a cowboy’s gun in a Western movie. It was effective, too, at least against Martian life; I tried it out, aiming at one of the crazy plants, and darned if the plant didn’t wither up and fall apart! That’s why I think the glass splinters were poisoned.

“Anyway, we trudged along toward the mud-heap city and I began to wonder whether the city builders dug the canals. I pointed to the city and then at the canal, and Tweel said ‘No—no—no!’ and gestured toward the south. I took it to mean that some other race had created the canal system, perhaps Tweel’s people. I don’t know; maybe there’s still another intelligent race on the planet, or a dozen others. Mars is a queer little world.”

CHAPTER V

The Barrel-People

● “A hundred yards from the city we crossed a sort of road—just a hard-packed mud trail, and then, all of a sudden, along came one of the mound builders!

"Man, talk about fantastic beings! It looked rather like a barrel trotting along on four legs with four other arms or tentacles. It had no head, just body and members and a row of eyes completely around it. The top end of the barrel-body was a diaphragm stretched as tight as a drum head, and that was all. It was pushing a little coppery cart and tore right past us like the proverbial bat out of Hell. It didn't even notice us, although I thought the eyes on my side shifted a little as it passed.

"A moment later another came along, pushing another empty cart. Same thing—it just scooted past us. Well, I wasn't going to be ignored by a bunch of barrels playing train, so when the third one approached, I planted myself in the way—ready to jump, of course, if the thing didn't stop.

"But it did. It stopped and set up a sort of drumming from the diaphragm on top. And I held out both hands and said mildly, 'We are friends!' And what do you suppose the thing did?"

"Said, 'Pleased to meet you,' I'll bet!" suggested Harrison.

"I couldn't have been more surprised if it had! It drummed on its diaphragm, and then suddenly boomed out, 'We are v-r-r-riends!' and gave its pushcart a vicious poke at me! I jumped aside, and away it went while I stared dumbly after it.

"A minute later another one came hurrying along. This one didn't pause, but simply drummed out, 'We are v-r-r-riends!' and scurried by. How did it learn the phrase? Were all of the creatures in some sort of communication with each other? Were they all parts of some central organism? I don't know, though I think Tweel does.

"Anyway, the creatures went sailing past us, every one greeting us with the same statement. It got to be funny; I never thought to find so many friends on this God-forsaken ball! Finally I made a puzzled gesture to Tweel; I guess he understood, for he said, 'One-one-two—yes!—two-two-four—no!' Get it?"

"Sure," said Harrison. "It's a Martian nursery rhyme."

"Yeah! Well, I was getting used to Tweel's symbolism, and I figured it out this way. 'One-one-two—yes!' The creatures were intelligent. 'Two-two-four—no!' Their intelligence was not of our order, but something different and beyond the logic of two and two is four. Maybe I missed his meaning. Perhaps he meant that their minds were of low degree, able to figure out the simple things—'One-one-two—yes!'—but not more difficult things—'Two-two-four—no!' But I think from what we saw later that he meant the other.

"After a few moments, the creatures came rushing back—first one, then another. Their pushcarts were full of stones, sand, chunks of rubbery plants, and such rubbish as that. They droned out their friendly greeting, which didn't really sound so friendly, and dashed on. The third one I assumed to be my first acquaintance and I decided to have another chat with him. I stepped into his path again and waited.

"Up he came, booming out his 'We are v-r-r-riends' and stopped. I looked at him; four or five of his eyes looked at me. He tried his password again and gave a shove on his cart, but I stood firm. And then the—the dashed creature reached out one of his arms, and two finger-like nippers tweaked my nose!"

"Haw!" roared Harrison. "Maybe the things have a sense of beauty!"

"Laugh!" grumbled Jarvis. "I'd already had a nasty bump and a mean frost-bite on that nose. Anyway, I yelled 'Ouch!' and jumped aside and the creature dashed away; but from then on, their greeting was 'We are v-r-r-riends! Ouch! Queer beasts!"

"Tweel and I followed the road squarely up to the nearest mound. The creatures were coming and going, paying us not the slightest attention, fetching their loads of rubbish. The road simply dived into an opening, and slanted down like an old mine, and in and out darted the barrel-people, greeting us with their eternal phrase.

Tick!" and popped away with his glass pistol.

"What could I do? I'd be a goner anyway when the sun set, but I couldn't explain that to him. I said, 'Thanks, Tweel. You're a man!' and felt that I wasn't paying him any compliment at all. A man! There are mighty few men who'd do that.

"So I went 'bang' with my gun and Tweel went 'puff' with his, and the barrels were throwing darts and getting ready to rush us, and booming about being friends. I had given up hope. Then suddenly an angel dropped right down from Heaven in the shape of Putz, with his under-jets blasting the barrels into very small pieces!

"Wow! I let out a yell and dashed for the rocket; Putz opened the door and in I went, laughing and crying and shouting! It was a moment or so before I remembered Tweel; I looked around in time to see him rising in one of his nosedives over the mound and away.

"I had a devil of a job arguing Putz into following! By the time we got the rocket aloft, darkness was down; you know how it comes here—like turning off a light. We sailed out over the desert and put down once or twice. I yelled 'Tweel!' and yelled it a hundred times, I guess. We couldn't find him; he could travel like the wind and all I got—or else I imagined it—was a faint trilling twittering drifting out of the south. He'd gone, and damn it! I wish—I wish he hadn't!"

The four men of the *Ares* were silent—even the sardonic Harrison. At last little Leroy broke the stillness.

"I should like to see," he murmured.

"Yeah," said Harrison. "And the wart-cure. Too bad you missed that; it might be the cancer cure they've been hunting for a century and a half."

"Oh, that!" muttered Jarvis gloomily. "That's what started the fight!" He drew a glistening object from his pocket.

"Here it is."

THE END

TESTS POSSIBILITY OF ROCKET SHIPS

Cleveland Engineer Believes in Such Air Propulsion

A belief that rocket-driven passenger planes may some day streak through the stratosphere five hundred miles an hour is spurring a young Cleveland engineer to test methods of harnessing rocket power.

Ernest Loebell would send planes through stratospheric airways twenty miles high—nearly double the altitude man has attained so far—and contends utilization of rockets and stratosphere would enable air travelers to breakfast in New York and lunch in Paris.

A graduate of the universities of Breslau and Oldenburg, Loebell is at work here on a rocket motor of experimental size and before long he intends to touch off a larger one—a twelve-foot rocket—which he hopes will zoom up twenty miles. An automatic parachute would open when the rocket began to fall, in the interests of preserving the mechanism and perhaps Ohio's landscape.

Attached to the projectile would be an altitude-recorder, automatic radio transmitter and a camera to take pictures of the earth.

The "kick-off," according to Loebell's de-

sign, would come from a combustion chamber into which gasoline or propane and oxygen would be fed under pressure. Exhaust from the burning chamber would shoot through a down-pointed nozzle, booting the big shell upward.

Of course, the idea of shooting passengers from New York to Paris would have its complications, Loebell concedes. They probably would have to sit in airtight compartments and wear oxygen masks, but he has in mind passengers more concerned with speed than comfort.

The envisioned rocket transport, perhaps to the disappointment of spectators at the airport, wouldn't take off like Fourth of July at the county fair. Regular motors would be used until it pierced the "thick air" layers.

Then, according to Loebell's idea, the wings would be folded in somehow and wham!—the fireworks would start. When the ship neared its destination, the rockets would cease firing, the wings would pop out again, the motors would roar and the ship that left New York this morning would land in Paris this afternoon.