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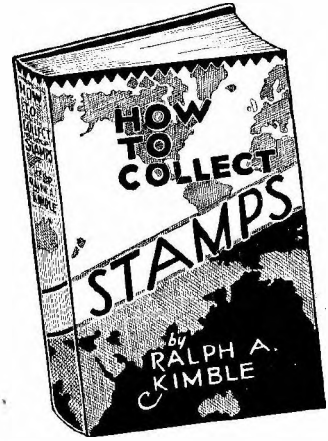

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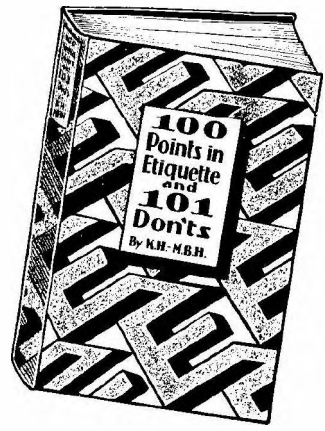

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THE following list of essentials has been prepared for members of the SCIENCE FICTION LEAGUE by the officers at Headquarters.

A FEW WORDS AS TO THE PURPOSE OF THE LEAGUE

The SCIENCE FICTION LEAGUE was founded in February, 1934. The Executive Directors are as follows:

Forrest J. Ackerman, Eando Binder, Jack Darrow, Edmond Hamilton, David H. Keller, M.D., P. Schuyler Miller, Clark Ashton Smith, and R. F. Starzl. Hugo Gernsback, Executive Secretary, Charles D. Hornig, Assistant Secretary.

The SCIENCE FICTION LEAGUE is a membership organization for the promotion of science fiction. There are no dues, no fees, no initiations, in connection with the LEAGUE. No one makes any money from it; no one derives any salary. The only income which the LEAGUE has is from its membership essentials. A pamphlet setting forth the LEAGUE'S numerous aspirations and purposes will be sent to anyone on receipt of a 3c stamp to cover postage.

One of the purposes of the SCIENCE FICTION LEAGUE is to enhance the popularity of science fiction, to increase the number of its loyal followers by converting potential advocates to the cause. To this end, the SCIENCE FICTION LEAGUE supplies members with membership letterheads, envelopes, lapel buttons, and other essentials. As soon as you are enrolled as a member, a beautiful certificate with the LEAGUE'S seal will be sent to you, providing 15c in stamps or coin is sent for mailing and handling charges. However, this will be given free to all those enrolled members who find it possible to call personally at Headquarters for it.

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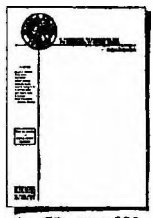

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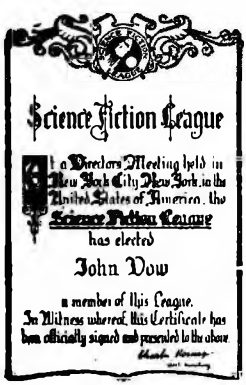

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"The Magazine of Prophetic Fiction"

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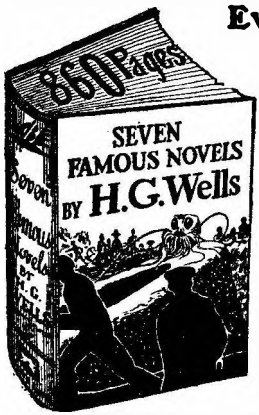

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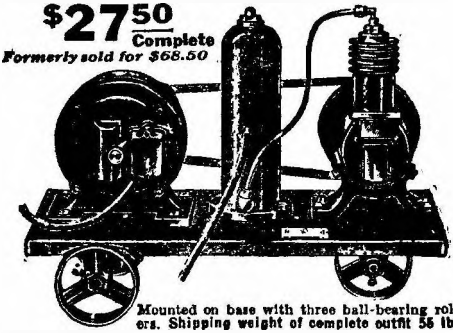

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CONTINENTAL PUBLICATIONS, INC.
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VOLUME 7
No. 4

WONDER Stories

SEPTEMBER
1935

. . . . Prophetic Fiction is the Mother of Scientific Fact . . . .

HUGO GERNSBACK, *Editor-in-Chief*

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WONDERS OF TRANSPLANTED ORGANS

By HUGO GERNSBACK

AS has been stated many times, facts are usually more incredible than fiction. Science-fiction authors have used as a favorite theme, for many years, the idea of transplanting organs from one body to another. Once in a while, an author was rash enough to build a story around a sort of mechanical robot kept alive by human or animal organs. When we read this sort of fiction we probably smiled and dismissed it with a laugh. However, science has a way in making the impossible and ridiculous come true with a regularity that is nothing less than astounding.

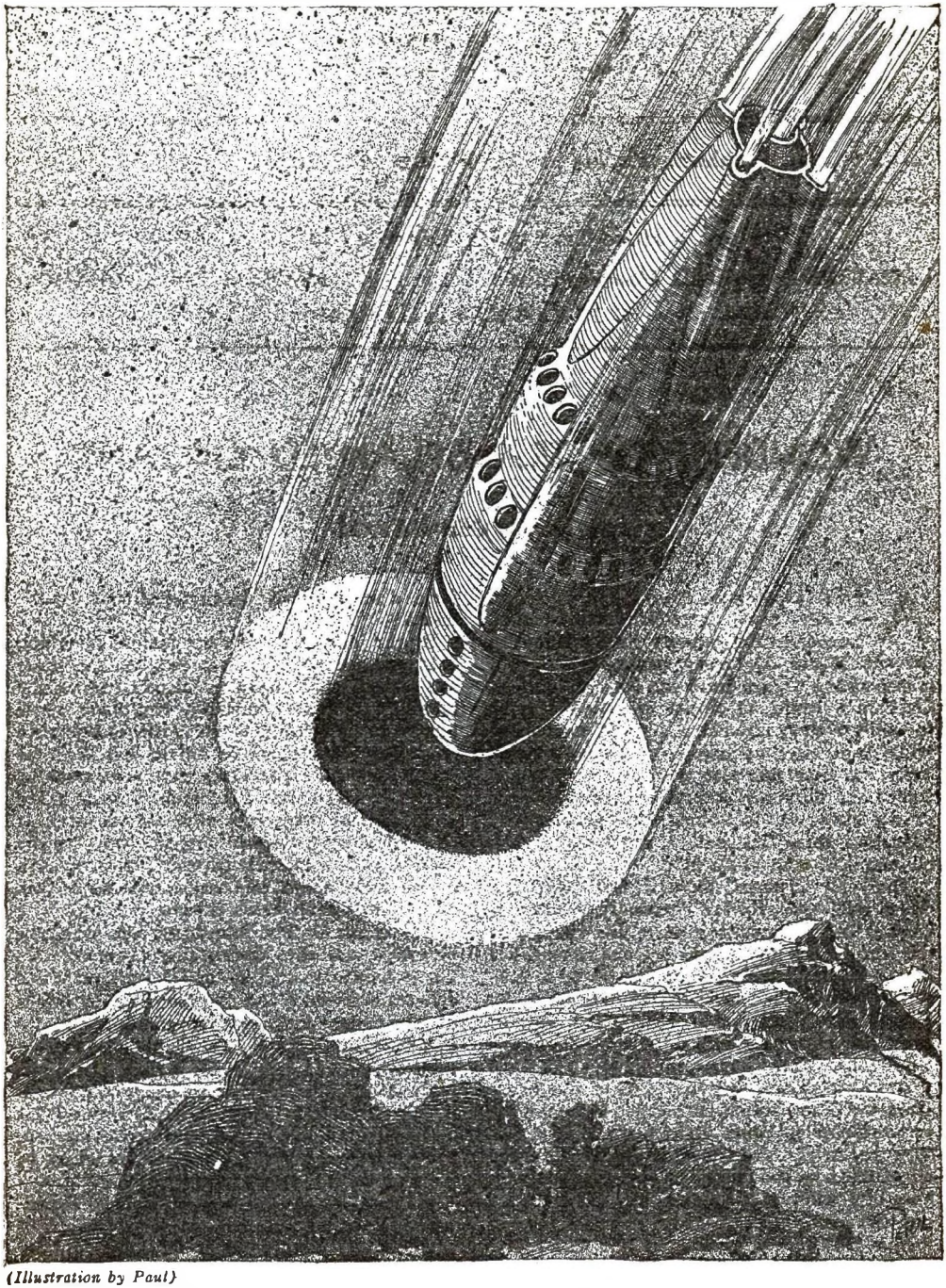
Thus, for instance, there is now alive and doing well, and growing constantly, a piece of chicken heart removed from a live chicken in the year 1912. Although the original chicken has long been dead, the piece of live tissue is constantly growing in a special solution prepared by Dr. Alexis Carrel, while the piece of chicken heart itself has been growing ever since at the Rockefeller Laboratories in New York City. There is no reason why this piece of live tissue from the dead chicken should not be kept alive for centuries to come. Indeed, the growth has been so steady that it is impossible to keep all of the new growth which took place. Every once in a while a large piece has to be cut off and discarded. Here then, we have *life among lifeless surroundings,* without the usual live animal body to guide the functions of a piece of detached flesh.

This, however, was only a beginning. Recently there has been announced by Dr. Alexis Carrel and Col. Charles A. Lindbergh, of flying fame, a series of still more remarkable experiments.

By the joint study of these famous scientists, it is now possible to have a detached live heart and an artificially prepared bloodstream in the laboratory; so that humanity can study whole human or animal organs which can be kept alive long after the human or animal has died. So far, twenty-six experiments have been made by Dr. Carrel and Col. Lindbergh. Organs taken from animals were kept alive outside of their original bodies. These organs were chiefly thyroid glands, ovaries, adrenal glands, spleens, hearts, and kidneys. The organs used were taken chiefly from adult fowls or cats.

The organ is first introduced into what the inventors call the "immortality chamber." To this is then connected an artificial artery, which delivers artificial blood into the organ by means of a complex pumping arrangement. The apparatus is, of course, kept in an incubator at the proper body temperature, while the organ itself floats in a special nourishing solution. It is thus possible to study in the laboratory the most vital animal organs and make any experiments that are necessary for the study of the organs.

Great things are expected from these experiments. Thus, for instance, we know very little of the heart diseases that are killing an increasingly large proportion of our population. By studying a detached heart, we will no doubt ultimately learn and correct the causes underlying heart diseases, as well as other organic diseases of the human body.



(Illustration by Paul)

And the rocket roared so that our plunge became a screaming whistle.

WORLD OF THE MIST

By LAURENCE MANNING

PART ONE

PROLOGUE

● Last year I happened to have to spend a month in Singapore waiting for a ship. A month is a long time and I made a few side trips about the Malay Peninsula by way of diversion. One week I spent visiting Penang—an interesting island—and since my hobby is sailing, I hired a small boat to sail about in. Outside the harbor some miles is a lonely lighthouse, and the keeper and I struck up a sudden friendship. His name was Jellicoe—a florid, quiet sort of man, with a radio hobby. He had a short wave sending station there and had I don't know how many interesting things to say about it. I'd brought some whiskey with me, to tell the truth, and the first thing we knew, it was night and he put me up on some rugs on the floor. We got to talking through the warm night and after a hesitating minute, he showed me a manuscript.

"You write?" I asked, interested in a fellow author.

"No . . . . that was . . . . well, dictated to me," he said, his face dim in the shadows. "Read it!"

"Well . . . . so I will . . . . but wait a while. Who dictated it?"

"Oh, it's a queer story. It came in on the radio about a month ago. Never had a message come in so solid and free of static. Yet it wasn't very strong. Anyway, I picked up a station that said it was a . . . . well, you can laugh . . . . a *rocketship!* And, one thing leading to another, I got a pencil and a pad of paper and wrote down what I was told. I know shorthand, and afterwards I typed it all out . . . . but read it . . . . *read* it . . . . and don't say a word until you've finished."

I started to read, and after the first few pages I looked up at Jellicoe rather thoughtfully. He backed his chair further into the shadows and waved a hand weakly, as if in defence.

"I'm not mad . . . . at least, I don't think so! You read the thing and talk afterwards!" he insisted. So I did. This is what I read.

● **There are two things that our readers have been clamoring for lately more than anything else—one is more of Laurence Manning and the other is more interplanetary stories.**

We are pleased to give you both in this story. Mr. Manning's ability to compose space tales has been proven by his highly-successful "Asteroid" stories of a couple of years ago, and we believe that you will find this "yarn" well up to the standard he set at that time.

However, the present story "has it all over" the ordinary interplanetary tale for the reason that it goes much deeper into the mysteries of the universe, way beyond the bounds of our present science into the realm of the highly imaginative and propounds logical, though extremely fantastic theories that will hold you spellbound.

Perhaps only two words are needed in this "blurb" to arouse your interest in this story, and they are, as we insinuated in the first paragraph—"Manning" and "Interplanetary."

CHAPTER I

A Curious Proposal

● Were everyone to receive his just deserts in this world, I should not have this story to tell. I have no real place in it. I haven't the brains nor the imagination to take a real part in it. All that can be said for me is that I am the son of a man who knew how to accumulate a fortune—his only son, in fact—and perhaps one other thing, that I place less value on my money than most men of considerable means. Yet even this last is probably due to the accident that I have never married and have neither wife nor children to inherit what I possess when I finish with life and go—wherever I shall go, if anywhere. Cogger Bent says that I am all wrong about my own worth.

He says that I have such hazy jumbled notions about scientific principles that I am apt to suggest impossible explanations upon every occasion. He agrees that this helps none at all usually, but whenever it is necessary to accomplish the impossible my suggestions sometimes point the way to a solution.

Cogger Bent is my friend—I'm proud to say it. Perhaps you might not think so just to look at him, for his poor twisted body and inefficient limbs are things to pity. But the brain behind that long pale face that pinches itself into a sardonic grin when it is not frowning is a brain that has few peers on earth. It is a terrible thing to have around—a brain like that. Ordinary friends are incapable of being told sudden shameful truths about their own behavior—they resent such brutal frankness. Cogger is frank, if you like. But then, to make up for it, his criticisms are as much constructive as they are destructive. I would do most anything for Cogger—I believe I would die for him and think nothing of it. That in itself is an attitude of mind I have acquired from association with him. He has for the thirty years of his life lived painfully under threat of death. As a baby, he recovered from infantile paralysis with a heritage of weakened body and heart. Life to him is not particularly a boon, and death nothing to be feared. Of such circumstances are heroes born and heroism must be slightly contagious, for I, in spite of my cowardice (which I have felt many times) and my fear of pain and suffering (which I have actually known but little) seem to find myself engaged upon adventures, like a very Ulysses. But then, neither Cogger nor I would ever have done anything had it not been for the third member of our clique —Wadsley Billing.

And, of course, if I am to go back to first causes, Wadsley would never have dreamed of such an insane undertaking had it not been for the death of poor Kitty. Kitty was his wife and when I say both Cogger and I were head over heels in love with her—hopelessly, mind you, for she and Wadsley were happily married—then you may get some idea as to what kind of an angel she was. Somehow I can't bear to think, much less write, of her death. It seems so long ago and sad. Moreover it has nothing to do with this story—except to start it.

Poor old Wad was in a bad way for a month—mooning around with a long face and fidgeting at each new task he took up, as though nothing were worth doing any longer. He would have gone on living alone in the apartment in 118th Street near the Drive had we not put our feet down and made him sell the furniture in one lot and surrender his lease. Cogger and I had too large a place, anyway, what with eight master bedrooms and ten servants. So we captured our friend and brought him up to Briarcliff in the big Rolls and within twenty-four hours noted a change in him for the better. His huge barrel of a body didn't slump so hopelessly, but began to take on backbone again; his strong, ruddy face ceased to express the lackadaisical emotions of a ball of putty and his jaw muscles grew firm—while his steel-blue eyes hardened and seemed to carry more wrinkles at the corners than formerly. But best of all, he actually contradicted Cogger twice on the second day and Cogger, hunched up with his chin on his knees, winked at me solemnly to make sure I was noticing the miracle.

Kitty's death had half-infected our friend Billing with something religious about life after death. Well, as a matter of fact, I had a vague smattering left over from a proper childhood—enough to hesitate before I made any remark upon the subject. Cogger's eyes glistened and his face reflected some inner irony. I expected one of those devastating pieces of verbal dynamite and was surprised when he said nothing whatsoever. Wadsley looked around at us.

"Oh, I know!" he exclaimed irritably. "You think I'm talking nonsense and you're afraid to say so for fear of hurting my feelings. Don't worry! I know it's nonsense as well as you. Only . . . . well

. . . . it's such a nice theory—sort of flattering to our poor human egos. As if we were too important individually to just pass out of the picture forever, like . . . . like Kitty." His voice trailed off and he turned to stare out the window at the dead autumn landscape. Cogger grunted.

"Why not test it, then, instead of just wishing?"

Wadsley didn't pay any attention. I was too amazed to answer. There was a moment's silence before Wadsley swung around to stare at his friend.

"What did you say?"

"Why not test your nice anthropomorphism—see if it might really be true?"

"Don't be a damn' fool, Cogger!"

"As a matter of fact, why shouldn't I? What's wrong with damn' fools?"

Wadsley shook his head wearily. "I can't go in for one of those idiotic arguments today, old chap."

"Then answer my question." Cogger's face suddenly was frowning and serious. I rose to my feet. "You know you're being silly," I pointed out. "That's the trouble with all religion—you can't test it. If you did, it would cease to be a religion."

"Yes," added Cogger quietly, "it may turn out to be a fact, possibly."

"All right, a fact," I conceded. "Now suppose we were to get some guns and see how many pheasants we can bag before dinner."

Then Cogger winked one eye at me, perfectly serious, and I sat down again. "Spirits," said Cogger, "and ghosts and souls and angels and gods—or for that matter, devils, fairies, genii, houris, gnomes, elves, and apparitions—have been reported upon by impartial observers many times in the world's history. They may all be imaginary, of course, but I think it's possible they exist—or that things like 'em exist—somewhere, and can be seen sometimes by men."

"Oh, for God's sake stop rotting," rumbled Wadsley wearily. "Under what possible conditions could the impossible exist?"

"Under no possible conditions, of course. The impossible can exist only under impossible conditions," replied Cogger placidly.

"You're talking Greek—or nonsense."

"Think so? You have that ego you were speaking of, haven't you? The conditions you enjoy are perhaps the only conditions that can be enjoyed, eh? Suppose there were a place where all the laws of nature were different?"

"Let's get the guns, Trench," turning to me. "Anything's better than this!"

"We-e-ll" I replied cautiously. "Cogger's a queer chap, you know. He's been stewing something around in that mind of his for the last day or two. Let's get it out of him. If it is nonsense, after all, what harm? It wouldn't be the first time."

"Good man," grinned Cogger, still motionless on his chair. "And it isn't altogether nonsense. Look here, you've probably read various speculations and imaginary stories about the fourth dimension, haven't you? Well, they're all pretty fallacious—not even possible. A four-dimensional creature, supposing one to exist, couldn't see or feel us, nor we him, any more than we could see a two dimensional being spread out on that floor. Imagine him—a foot wide and six feet long—but without any thickness whatsoever. Not just thin, like a layer of molecules. Not merely too thin to see. But really and truly without any thickness. Ten million of him piled one on the other would leave that floor just as bare as it is now. How are you going to see him or hear him or sense his presence? You couldn't. No more could a four-dimensional being get into touch with us. There wouldn't be any point of possible contact."

● Wadsley stared contemptuously at him.

"What on earth of it?" he demanded.

"Nothing, maybe. Or something, if it should turn out that way. Wait and listen. You're a mathematician, Wad. How many variables are there in figuring the Einstein equations for space and gravitation?"

"Ten, I believe. You should know better than I."

"Ten, eh? Ten variables are possible in space. How many are possible to you, would you say?"

Wadsley frowned. "Three, of course. East and West, North and South, and up and down, putting it roughly. Oh, yes . . . . a fourth variable, time. Why go into this school-room baby talk?"

"Patience, my fine scientist with an ego. I'm coming to you presently. You spoke of possible conditions a while back. Well, you meant, did you not, four out of the ten possible sets of conditions? Let's just put your question in its proper form. 'How can the impossible exist,' you asked, 'under the conditions obtaining within these four variables we call dimensions.' Now when you put it that way, you see, the question and answer are obvious."

"But you just said," I suggested, "that a four-dimensional creature couldn't be seen, heard or felt."

"And so?" his face became suddenly impish and wise. I felt a sudden unreasoning anger.

"And so what on earth of it?" I retorted, imitating the inflection of Wadsley's voice.

"But how about a three dimensional being," said Cogger, more inscrutable than ever. "If we gave the dimensions numbers, suppose ours are one, two, and three and suppose a world of creation existed in dimensions four, five, and six? We could see them and touch them very easily if we could translate ourselves into their dimensions. In other words, they might exist and it could be proved whether or not they did exist."

Wadsley's jaw squared to the battle and I was warm for argument, noticing all the while how diabolically clever Cogger was and how shrewd his tongue. I more than half knew he was inventing the whole conversation for the express purpose of rousing Wadsley's spirit—yet here I was hooked by the same lure!

"Proved!" almost shouted my large friend. "Will you kindly tell me what possible means of contact you have? Even suppose one of your two imaginary sets of dimensions are identical; suppose we, in one, two, and three, look along dimension three. We can see there nothing that is not in dimension one or two or both. A being who existed in dimensions three, four, and five might exist there but we have no means of contacting four and five so we would fail to find him. How could you prove anything about it?"

"We'd have to change our own dimensions—our frame of reference—first," pointed out Cogger and then frowned portentously. "You're trying to argue about it. Don't. Try to help me imagine the thing, instead. It's your great fault, Wad. Always disproving things instead of taking them at their face value and sizing them up in relation to all the known facts."

"But look here," I ventured. "If you're really serious, tell me what possible means —or impossible, I suppose I must add— you would use to change our set of dimensions. It can't be done. Nothing in creation can bend a direction!"

"Easy there, Trench," said Wadsley. "Gravitation does that, you know. Not but what you're right in your general meaning. But as a matter of fact, there is one thing—one only—that can warp dimensions. Now how are you going to make use of it, Cogger?" and he grinned irritatingly down from his six-feet-three.

"We-e-ll! Mass will do it. More mass will do it still more. And mass acts as the inverse square of its proximity, old chap. I'll venture that East is a little less Easterly than usual if you are lying on a thousand tons of lead."

"Huh! About one millionth of one millionth of a second! A millimeter in a trillion light-years!"

"All right, all right! Don't go off the deep end about it! Only admit, at the same time, that I've answered your question and proved my point. Now if it were possible to concentrate the mass of a mountain into a cubic foot, you'd perhaps warp your dimensions clean out of their axis. And if you did that, you might swing yourself

into an entirely new set of dimensions. And when you got there you'd still be three-dimensional and if there were any other three dimensional matter in those dimensions, you'd see it."

"Well," grumbled Wadsley, "let's not put too fine a point on this tissue of possibilities. All this is conceivable, but you said something of tests, I believe?"

"Ah! Let's get down to cases! Gravitation will bend our three dimensional existence. It does so, in fact, and space, as we know it, is finite, though unbounded. We have merely to concentrate enough mass and get close enough to it. Everything has its breaking point. Enough gravitation will not merely bend our dimensions, but strain them to the breaking point and we shall be shifted into a new set of three dimensions."

"And supposing that that be true, which it is not, necessarily, although it might possibly be, just what miracle will concentrate gravity for you?"

"No miracle. Neutrons!* A cubic yard of neutronic matter. It would be in the order of billions of times the weight of our earthly substances. If a yard of earth weighs a ton, then a yard of neutron would weigh a billion tons. Its tiny size would enable us to get close to it—within a few feet. Our earth weighs billions of billions of tons, but we are four thousand miles from its center. Gravitation depends more or nearness than on mass, you know!"

Wadsley laughed aloud. "You'd gather this neutron here on the floor, I suppose? It would sink through the floor—through solid steel, in fact—as a pebble sinks through water. Your neutron would end up at the center of the earth, Cogger!"

"Unless it never were on the earth at all!"

"What do you mean?"

"We would have to build a laboratory out in space at some distance from the earth—a rocket ship, perhaps, speeded up to three or four miles a second and about a thousand miles off the earth travelling around it in an orbit like a little moon. On such a ship neutron would not have its great weight, but could be held in place with steel girders—there might be so little gravitation that a thread would hold up a mass that on earth would weigh many tons."

"And this rocket ship would take your billion tons of neutron from where? You'd have to make your neutron by atomic bombardment up there in space, Cogger. Moreover you'd have to take up with you a little more than a billion tons of matter from which to make it—to say nothing at all of the energy required to perform the task. The thing just can't be done."

"Don't rush me; I'm thinking this thing out as I go along," answered Cogger, and he was silent for a time. It was then that I ventured to make a remark which Cogger insists was inspired idiocy.

"How about the atoms inside the sun," I suggested. "They're stripped of all but one or two layers of electrons, according to Jeans. They might not be exactly neutron, but at least they are many times denser than any substance we know. All we would have to do would be to invent the perfect heat insulator and get inside it. We wouldn't be roasted, for the heat couldn't reach us, but we'd have plenty of gravitation nearby!"

● Wadsley grinned at me, but Cogger's eyes rested upon my face sadly and with a vague, mystic expression. He murmured something, for I could see his lips move. Then he said it aloud. "Suns explode. We know very little about such things."

He went on: "Suppose that large suns occasionally build up such heat and pressure that near-neutron is actually formed in their cores. At some point, the strain is so great that the sun explodes. Off into space race all the electrons that have been squeezed off the protons. They lie on the surface of the sun. The surface is driven away more rapidly than the core, but the core might be disrupted as well. Imagine the thing, man! Everything is driven out of the way of the core of that sun! It

*Atoms in a solid mass.

finds nothing in space on which to feed for its enormous valence. On it travels, year after year, picking up a few ions a century, perhaps acquiring a layer of satisfied protons all over its surface in the course of millenniums. But inside, the great mass of that asteroid would be nuclear. Well . . . . if that were so . . . . our rocket ship has only to find such an asteroid out in space and make use of it. There are such things in space—look at the companion of Sirius! Ye-e-s! I believe that's the answer. Out of the mouths of babes and sucklings, eh, Trench? Never mind! You've helped to finish as fine a piece of theorizing as I've ever run across. Look here, Wadsley, do you realize that this thing's without a flaw? It all may be true! And if we can get hold of a piece of nuclear or near-neutronic matter out in space, we can actually see for ourselves what happens when a dimension is violently bent—perhaps even broken!"

"And the ghosts and gods?"

"Oh, that was just the start of the thing. As a matter of fact, I merely started out to show you how stupid such drivel could be by trying to defend their existence. You've been brooding too much and I thought some sanity might result from my little insanity of argument. But it's got beyond that now, fellah! Let's consider this thing practically. We need a rocket motor to drive a ship out into space. We'll be in the ship and spend the voyage looking for pieces burst out from the insides of stars. How'll we tell 'em when we see 'em? Well, we could shoot bullets at every meteorite we see. Then we can sight on the bullets. If it's dense enough, it will pull the bullet noticeably out of the direction of fire. That can all be worked out. Of course, we may not find anything but the usual iron and nickel masses that fall occasionally to the earth. What of it? We will have had the fun of building a ship to fly out into space. Maybe we'll get killed. What of it?"

"Hmm!" responded Wadsley. "The rocket ship, with Trench's money, might be possible—after twenty years of work. As to the getting killed part of things, it's more probable than anything else you've happened to mention, but I've no particular objection. Rather a lot of work and expense for the sake of two suicides."

"Three!" I snapped. "Think I'd be left out?"

"What on earth do you want to die for?" asked Cogger, raising his eyebrows. "You've health and wealth."

"But only two friends," I replied.

I have tried to give almost word for word this curious conversation. Thus started an adventure—strange and improbable. Nevertheless, it happened and all that was said that day had a bearing on the happening, as you shall see.

CHAPTER II

Into Space

● The next two years passed like a dream.

In the late autumn of 1931, we were ready to start on the wildest and most improbable adventure I had ever imagined. I shall cover only a few of the highlights of this period. First off, my job was to provide the money. I had converted all my late parent's holdings into cash and the cash into government bonds. The total came to a bit over twenty millions. Cogger said it might be enough! That was in September of 1929 and took three weeks. It was scarcely over when the great crash came and I congratulated myself upon my prudence. From then on I was a mere observer—an interested one—and privileged only to sign checks and sell bonds as needed.

I remember the first session of planning very well—Cogger hunched up in his chair and drawing out formulæ and applications while Wad paced the floor and demolished them one by one, ending up with a compromise of workability—then over to the huge drawing board to jot down the accepted ideas with a pencil that flew like lightning. They began at the beginning, that session—I copied down the first figures on the drawing board: Reaction $\times$ lbs./per sec. $\times$ ft./per sec. $\times$ 1/32.2.

"But our rocket ship will be propelled by gas," objected Wad, and then they were off. I listened uncomprehendingly for half an hour and went out for a walk. When I returned, it was dinner time and the board was covered with figures. Wad was writing down an equation and I stood watching.

"That seems all right," he said. "Now we have something to start with."

"Is it finished?" I asked.

Cogger grinned. "As soon as Wad has it written down you can climb on the paper and travel to space. That equation will get you there—only make sure you don't forget to change the sign if you remove a bracket, or you're liable to fall!"

I grinned sheepishly and copied down the figures. I may as well present them here, for though they mean nothing to me, possibly some of my readers may be interested. Incidentally, the equation looks almost solid enough to bear a man's weight up into space! This was it:

$$R = 2AP\sqrt{1-\left(\frac{P2}{P1}\right)^{\frac{S-1}{S}}}\ \sqrt{\left(\frac{2}{S+1}\right)^{\frac{2}{S-1}}\ \frac{S2}{S2-1}}\quad (LBS)$$

After dinner I made my plea for elementary enlightenment and Cogger waved his hand at the drawing board. "Forget all that," he said. "That is just an exact definition of the job we must do. It represents the pressure inside the chamber where our fuel is to be burned—that is P_1 in the formula—and the pressure of the atmosphere, P_2. That A is the area of the nozzle out of which the gases rush. The s is an exponent and will probably come out to about 1.3."

"But what is the use of such a complicated formula?"

Wad laughed. "Plenty use, fellah! We can design a rocket on paper and then calculate by this formula whether it will work or not, without ever going to the bother and expense of building it!"

"But . . . . what fuel do you use?"

"Well . . . . that depends on whether weight or size is more important. Oxygen will have to be taken in any event, but if size doesn't matter, the fuel to mix with it will be hydrogen. If the bulkiness of hydrogen is too difficult a construction problem, then we might use gasoline, or perhaps benzol."

"Just one thing more," I pleaded. "What will the power you develop actually do . . . . I mean, what will it push against?"

"The rocket, of course!"

"No, but out in space there's nothing to get a leverage on."

"Oh, I see. This fuel will be all burned up. It will weigh thousands of tons and when burned will be thrown violently away from the ship. The ship will recoil in the opposite direction—*comprenez?*"

"Yes," I said thoughtfully. "Thanks." And I left the room quite convinced that it was all a trifle ridiculous. Still, I was prepared for anything when Wad and Cogger got together.

It was just as well that I was. Within a month, I had paid out more than fifty thousand dollars and half of the big garage had been transformed into a workshop. A huge lathe and milling machine were set up there under the direction of two mechanics—they had moved into two of the empty cottages on the estate with their wives and families. A small concrete shed had been erected and a plant for liquefying air was being installed, while another concrete shed in the middle of an open field had been built for making tests. Then began months of patient testing. At all hours might be heard the hissing roar of a rocket in the testing shed and more than once a deafening explosion, with its aftermath of excited post mortems performed upon the shattered remnants. I took my part in all this, for it was something I could understand. The search was for the greatest possible reaction from the least possible amount of fuel and it ended after a few months with a large egg-shaped chamber from which projected a flaring nozzle six inches long.

Then we began upon our search for the proper material. Tool steel firing chambers burned out in thirty seconds or less. Nichrome was little better. Tungsten was actually considered, but when I

learned the cost, I asked how we could manage to pay for a full-size rocket, if we should make a model work. Wad nodded. "Besides, how could we mold it to shape?" he asked, and Cogger reluctantly agreed. "But what *shall* we use?" he asked.

We tried everything and all failed. I can feel even now the thrill that came when we had our first success. It was a chamber of plastic fire-brick, reinforced with embedded steel wire, and it burned for fifteen minutes without mishap. When it had cooled and had been examined, it was found entirely unharmed by the ordeal of heat.

Then we turned to tank designing and this was quickly settled by the use of high-carbon steel in welded sheets with bulged ends. Problems of fuel feed and control had been worked out during the chamber tests and we were ready to start upon our first working model. In less than a month it took shape in the shop. The model stood ten feet high and a foot in width and the chamber held a quart of water in its pressure test. Its lift had been calculated at two hundred pounds and its weight at fifty, leaving one hundred and fifty pounds effective pay-load. "I only weigh one hundred and thirty," drawled Cogger. "The dam' little thing would lift me if I were fool enough to go up on it."

But instead, we put an altimeter, a camera, and a parachute on it, and shot it at dawn on a March morning. It hissed up out of sight like a light ray and every servant on the place had field glasses while the chauffeur tuned up the big car ready to give chase when it should be sighted. This was not until three minutes later when one of the mechanics who was sitting in the top of an old pine that stood on a little hill commenced shouting and waving his arm. I clapped my eye to the telescope I had mounted in the field and after a minute I saw it too—far off to the west—just a dot of black dragging a parachute slowly down through the air. I made sure of the direction, which I calculated would fetch it down across the Hudson, and we piled hastily into the car and drove furiously to the new Bear Mountain Bridge. Once across we stopped for another observation and I caught a glimpse of the parachute now low over the next hill—not a mile away. We made the distance in one and a half minutes and were in time to see it land in the woods where we found it after twenty minutes of moist tramping. It was barely damaged at all and the altimeter had recorded heights on a drum. This we examined breathlessly and read 80,000 feet!

"We figured 100,000 feet before allowing for air resistance," said Wadsley in elated tones.

"Well," said Cogger, "that seems to be that."

That night the three of us gathered in the living room after dinner and discussed things in general. Wadsley was excited in a morose fashion. "I'm for building a large ship and landing on Mars!" he began.

"Could we?" I asked. "I mean, could we get there and come back?"

"Who said anything about coming back?" demanded Wadsley and strode over to stare out at the starlit evening. What he saw there I do not know, but a shadow fell over our gathering—a shadow that had been missing for the past few months of intensive work. I sighed. Poor Kitty!

● Cogger was pouting out his lips judgmatically. "Let's not be foolish. We can leave the earth easily enough, but to land on Mars will require ten times the size of ship needed just to leave the earth. Then to rise up again from Mars—why a hundred times as much fuel might be too little!—to say nothing of keeping liquid oxygen cold during the months the voyage would require."

"Size is merely time and money," grunted Wadsley without turning around.

"Perhaps. Perhaps not. But frankly I don't see anything thrilling in a journey to Mars compared to some other things we could do."

"What on earth do you mean?" I gasped.

Wadsley interrupted. "I suppose you refer to that tissue of dreams we discussed the first night of my arrival here, eh? Well, act your age, Cogger! We have an actual possibility of going to Mars now. It will take a few years more, but the main job of invention is done."

"Meaning, I suppose, that while the rocket ship can be built, you don't think a journey into a new set of dimensions can be made, eh?"

"Oh, don't keep up the pretense! You're just rotting and you know it!"

"Hm'm! You don't doubt that gravitation bends our dimensions?"

"No."

"Nor that if we could get a great enough gravitation we might bend them to the actual breaking point?"

"Oh, no. It's absurd, but it might be true."

"Then you must doubt the possibility of finding a mass of dense nuclear matter, eh?"

"Of course—and I doubt that anything would happen if you did."

"Well, as to what'd happen—you'll admit it would be worth while trying! As to finding dense meteorites—that's a different story. You know something about meteorites that have fallen on the earth, of course. Did you know some of them were cold on arrival and that some of them were warm? Yes? Well, did you know that some of them were so unbelievably hot that they set woods on fire a hundred miles away? That mean anything to you? No, don't argue yet; listen. Did you know that meteors striking the earth sometimes sank out of sight—right down through rock and sand? There's one in western America that is miles deep. The big one in Siberia is also deeply sunk. Just what speed was required to penetrate so far, Wad? Is there any speed in space that would account for a fall here rapid enough? Doesn't the penetration suggest the way neutronic or nuclear matter would act? The heat—like the inside of a sun! The penetration—like the density of materials inside a sun! Perhaps some of our meteors are actually the very kind of thing we're looking for."

Wadsley turned around. "I suppose you're serious. You've raised some points that can't be answered, of course. Maybe there are ghosts—we can't prove the contrary. It simply isn't likely. Why imagine them?"

"Good man! Then you'll agree to my proposal. It's simply that we build a small rocket ship to take the three of us up about five miles a second and so that our ship will act as a tiny moon rotating around the earth. There must be thousands of meteorites doing the same thing—ones that almost hit the earth and were caught by its attraction so that they now race about it in narrow orbits. Once among them, we can cruise slowly about and see what is to be seen. That's all I ask—a few months spent up there and then return again. If we fail, then let's build a big rocket and have a try for Mars, if you like. At least it would be good experience for such a venture. What do you say?"

"Oh, all right. It will be a sort of trial trip. 'Twon't result in anything, of course, but I'm game. Doesn't make much difference to me, anyway."

So it was decided—off-handed and casual! Cogger gave me the list of purchases the next evening and when I had got estimates in, I found the best I could do was over half a million dollars. There was five hundred tons of sheet steel, among other things, and we set aside a twenty acre field for construction. In a month it looked like a factory, with dozens of workmen and donkey engines and cranes and machinery in all directions. For ten months the work continued and gradually our vessel took shape, standing upright in a cradle of steel lattice that towered four hundred and twenty feet into the air. Of course, my neighbors were curious, but when I assured them the structure was temporary and experimental, they were relieved—and after all, I own nearly a thousand acres and was not exactly spoiling any view. Had we revealed the real purpose of our work, we

should have had crowds and reporters, but we carefully refrained from telling anyone. Not even our two master mechanics knew just what we were building. They received fifty dollars extra every week for the express purpose of quenching curiosity. Naturally enough they must have suspected—but fifty dollars a week was worth a great deal of suspicion—especially in 1931.

The ship proper was fifty feet long and twenty through and it was surrounded by a "booster" vessel that was twice as large, making the whole thing a hundred feet high and forty in diameter. When the "booster" had exhausted her fuel, the idea was that the smaller ship would turn on power and complete the journey alone. The "booster" would then, according to theory, gradually slow down and fall back to earth. "And we must be careful to aim east," Wadsley pointed out, "so that it will fall into the Atlantic Ocean and hurt no one." Cogger asked what would happen if it should strike an ocean liner. "Chances are millions to one against it!" replied Wad. "Besides, we have to take that risk or not go at all."

I may state here what I learned only after exhaustive questioning. Some of my readers, at least, will require elementary details in order to understand what was being done. The speed we needed was five miles a second. We could acquire this at a rate of "three g," which I found meant about 100 feet per second added speed for each second of firing. To reach our speed would take 265 seconds—or, allowing for air resistance and other unknown factors —about five minutes. The power in a pound of mixed fuel (benzol and oxygen) was sufficient to raise itself and an additional quarter pound at this acceleration for a period of three minutes. The additional quarter pound represented two ounces of structure and two ounces of pay-load. Thus the "booster" vessel would carry the space-ship proper as payload and the relative weights were as 18 ounces is to 2 ounces. But this pay-load was a ship of some three hundred tons and it in turn having been given a starting speed by the "booster" of 100 ft. per second × 150 seconds, or 18,000 feet per second, then commenced firing and was capable of doubling this speed by exhausting its entire fuel. Actually, it would use only half of its fuel to acquire the necessary five miles a second. The remaining power would be saved for slow maneuvering in our orbit about the earth and, finally, for retarding our speed for the fall back to earth.

● As to that fall, the ship had wings like an aeroplane that could be projected from its sides. The return to earth would be one long glide without power and the landing was a subject that frightened me when I thought of it all—which was oftener than I wished. Of course, the ship would have lost nearly all its weight —four-fifths of its three hundred tons would be fuel—but even so, landing a sixty ton glider is not easy. Moreover, we might not be able to land anywhere but on the ocean—perhaps miles from land. When I expressed my fears to Cogger, he only laughed. "We'll take along a parachute each," he said. "Then if the landing looks dangerous, we can bail out and watch the ship crash while we float down in safety."

So, you see, everything was thought of and provided for—so much so, that I gave up trying to understand all the engineering details and confined my interests to the cabin where we would actually eat and drink and breathe for the long months of our trip. It wasn't a large cabin, incidentally—not more than fifteen feet across and ten feet high. The ceiling was narrower than the floor and both were in the form of smooth circles. The material was aluminum and the three bunks, the three chairs, and the single table were of the same metal, combined with basketwork where needed. Very plain and serviceable, you see. Three portholes of heavy quartz gave a view of the outer world and a door gave access. The walls were double—about two and a half feet of dead space between—and the cabin door opened on an air-tight vestibule. It

was necessary to close the inner door and open the outer before one could reach the outer air.

Water tanks were set in the space between the walls and fed by taps to the cabin. For food, we had a great reservoir of canned goods and a refrigerator, but no stove. As for air, rows of holes at the ceiling-line connected with pumps that forced air into the cabin. Along the floor were more holes, and pumps drew air out. Overhead was the air-cleaning and purifying plant and this was supplemented by drawing oxygen in small quantities from the great tank of liquid oxygen under our feet. Indeed, as Cogger explained to me, the oxygen tank could never be closed, or it would build up such pressure that it would explode. A vent had to be constantly left in the tank and from this the oxygen gas escaped as the liquid below boiled. We merely used this waste oxygen for breathing.

"But Cogger," I asked at once, "won't the oxygen in the tank all boil away in a few hours, then? We won't have any left when we want to put on power for our return."

"The loss in that tank—which is designed to reduce loss to a minimum—is five per cent every twenty-four hours," he replied. "Figure it out: losing 5 per cent every day, our reserve of oxygen will shrink to half in 14 days—two weeks. In a month, it will have shrunk to one-quarter; in two months to one-sixteenth. Two months should be enough time. We are taking over 100 tons of oxygen. We'll use up not more than fifty in reaching and establishing our orbit around the earth. The remainder, after two months, will have shrunk to one sixteenth—or three tons. These three tons will be ample to break us out of our orbit and start us falling back to the earth. Moreover, the oxygen supply can be checked every day. The minute it gets dangerously low—back we start, whether it is two months or two weeks!"

I have given these points in some detail, for I want it understood clearly that this adventure actually happened. So far, of course, it can be explained. But as for what comes later—I will need any credulity that may exist in your minds! The rocket-ship was finished at last and we set the date for our start, as I have stated at the beginning of this chapter—October 23rd, 1931. Our steel structure, four hundred and twenty feet high, leaned at an angle of ten degrees toward the east. In it our ship stood, and launching wheels fixed in its walls slid up on heavy steel rails. When we put on power, we would be automatically directed for the first two and a third seconds of our flight. After that, Wadsley at the controls would take over manually. We were to rise until we reached a height of three to four hundred miles, at which point we would gradually flatten out into a circular orbit. Thereafter, at slightly less than five miles a second, we would (if we wished) forever circle the earth. Even after we had all died, said Wadsley, we could let our ship continue in its orbit bearing our dead bodies—and not a bad tomb, at that. While he spoke, he stared abstractedly up at the sky and after a moment shrugged his shoulders and turned back to his work.

It is well to understand the whole maneuver beforehand, for when we had actually accomplished it, there was literally nothing to see or understand about it. On the 22nd of October, I paid off all our servants, except for the two mechanics. They remained during the afternoon and were instructed to stand by until we had left. Thereupon they were to receive one thousand dollars each from my lawyer in New York and forget the whole affair. "And leave your address with him," I added. "We'll be back in a few months, if all goes well, and may want you again."

"Ah-er, Mister Trench," began one of them, "maybe when you get to Eur . . . . h'mm! Perhaps you'll want to cable for us in a few days. Something might go wrong and you'd need repairs."

"Thanks," said I, secretly delighted at learning that he thought our destination was Europe. "We won't cable you, whatever else we do. Just leave your address

with the lawyer, and don't worry. Mr. Bent and Mr. Billing have thought of everything."

We had agreed to start at an hour before dawn, so as to be unobserved. This meant rising at four o'clock, and chilled and shivering we gulped hot coffee and brandy and got into our silk and leather jumpers, designed both for warmth and durability. The walk out to the launching stand was a gloomy one, and the stars seemed unusually bright and the night startlingly quiet. A light snow had fallen and gave the landscape an otherworldly look. We did not speak until we got to the ship. Then Cogger drew out of his pockets an object which he struck suddenly against the silvery hull. There was a tony sharp explosion at which I jumped. "I christen thee 'Space-steed!' he said.

"But—a christening—you should have used champagne!"

"Not at all," he replied. "I used a vacuum tube—more appropriate!"

Then we climbed up the steel ladder and let ourselves into the cabin. In a pile on the floor lay our loose equipment—bedding and spare clothes. Three bolts set in the floor had been used to lash the pile in place with rope. We fastened the inner door and Wadsley flicked on the light switch while we found our places each on his bunk and strapped ourselves in tightly. Wad's bunk was beside the control board and he could run the ship with one hand while lying there.

"Ready?" he asked and, receiving no reply, added, "Starting in ten seconds—get set—fire!"

For a brief instant there was nothing. Then my bunk trembled and a faint roaring sounded. I felt heavy and stupid and lay there minute after minute until Cogger, who was watching the instruments, gasped out, "The booster's empty, Wad!" Then Wadsley moved a lever and there was a fury of sound under our feet as our small second vessel put on power. For little more than a minute it continued and then Wad pulled back the lever and there was silence. There was more than that, for my heart rose up into my mouth and I felt suddenly empty. I knew what it was; we had no weight. I thought I should be ill, but lay there quietly and after a minute or two felt more accustomed to it.

In the meantime, my two companions had unstrapped themselves and were floating about the cabin cautiously as they tried to make observations to ascertain whether we were in our calculated orbit. Each motion of foot or hand seemed to send them careening madly about and it was fully five minutes before Cogger reached a port and held on with one hand while he focussed the sextant fixed there. After a few minutes he said, "We're not far off our orbit, Wad, at the worst. I should say it's safe enough to rig the cabin for space conditions and then check up afterward more exactly."

"Get off that bunk, Trench, and give a hand!" said Wadsley by way of reply.

Suddenly the cabin was flashing with light. We had risen into sight of the sun.

CHAPTER III

The Nuclear Mass

● I tried to get to my feet. You know how you give yourself a push with your hands to get off a bed? Well, that push that should have dropped me to the floor shot me rocketing to the ceiling instead and I bumped my shoulder there and rebounded back to the floor where I landed on the soft pile of bedding on which I managed to get a grip and so kept from bounding ceilingward once again. That was my initiation into space conditions.

Cogger laughed at me. "While you're there," he directed, "slip this rope through one of those metal eyes in the floor!" and he flung a length of rope gently at me. I managed to catch it and make it fast. It stretched from the floor diagonally to another bolt near the port at which Bent was standing. Wad was fishing another length of line from a cabinet set into the wall and this he tossed to me and I fastened it in another of the

rings. We worked on in this fashion for half an hour and at the end of that period our cabin resembled what might have been the web of an insane spider. Criss-crossing in all directions ran the light ropes and over and along them we swung as we went from port to port looking out on the empty medium in which our ship raced along its unresisting course.

Stars showed out of two of the ports. Through the other streamed the blinding rays of the sun—a small hard ball of fire with a rosy corona of flame around its firm outline. But by shading my eyes with one hand, I made out the earth below it, or rather the ocean. It was featureless, of course, at that height, but as I looked, I saw between continents of cloud the dark masses of land far to the east. It was Europe, though I could not have recognized it. The earth spread out huge below us—occupying almost a quarter of the visible sky. Even as I looked, the distant landscape changed, for with our speed, we would circle the planet every hour and a half. And as for the sun, it passed overhead with even greater speed, for we travelled east and this added a thousand miles an hour to our speed relative to the sun. In the first "day" (that is, twenty-four hours) we circled the earth sixteen times, but we enjoyed seventeen sunrises—the first over the Atlantic, the second over New England, the third over Chicago, and so forth. But to tell the truth, I did not see the first two or three, for I felt terribly sleepy and lowered myself gently onto my couch. I could not stay there, I found, for even the pressure of my lungs in breathing pushed me gently up into the air where I floated until I reached out a hand and pulled my body back against the couch. Finally, in desperation, I fastened myself tightly against the top of the couch with straps and a blanket and the pressure was so comforting that I fell instantly asleep and did not waken for several hours.

When I arose, I was hungry and proposed breakfast to Wad and Cogger, who were each at a port checking our orbit with minute pains. They both agreed and I broke open some canned beef and crackers and brought some cheese from the refrigerator. For drink we had cold coffee and I complained at the absence of a stove, but Cogger pointed out that the provision of electric current would require a great deal of weight, and as for actual fire, we would not have enough oxygen to permit its waste. The cabin itself was warm enough. We were flooded by the hottest kind of sunlight for more than half of each period of an hour and a half. When the sun passed behind the earth, we could, if we grew chilly, close all ports and so preserve our warmth until the sun should again come into sight. Practically, our temperature grew too warm and we were compelled to shut out the sunlight most of the time while Wad rotated the hand weight so that one side of the "Space-steed" which had been brightly polished was kept sunward.

Somehow it seems thrilling—or as if it should be thrilling—in the telling of it, but at the time I recollect feeling rather bored after the first forty or fifty hours. It was monotonous there—staring out of foot-wide ports at black "sky" studded with stars. The stars were smaller than on earth, but brighter and showed more variations of color. The sight of the earth itself was rather interesting, of course, and since part of the ship's equipment was a movie camera, I spent some time in mapping the entire surface—the mosaic made from these pictures is a strip that extends from the arctic circle to well below the equator. Clouds interfered frequently, but by perseverance I got clear pictures at one time or another of the whole field. For food we had bread and crackers, canned meats and fish, vegetables both raw and canned, milk from cans, water from the tap, a little wine and an occasional glass of brandy. Eggs, butter, and cheese were in the refrigerator, so that we did not lack for variety or wholesomeness. We slept when we felt like it, though one of us kept watch always as a matter of precaution. All in all, it was a quiet and uneventful life, in spite of our unusual circumstances.

I must mention one piece of strangeness, the way water and liquids acted. You couldn't pour them out at all, for they would rebound from the glass if you held one under the pressure tank, and float all around the cabin. The "cans" of liquid had been made of rubber and fitted with rubber necks. Our "glasses" were also fitted with rubber necks. To "pour," you squeezed the liquid from one container into the other. To "drink," you sucked through a straw. It was strange at first, but soon became commonplace.

And so, by introductory steps, I come to the actual search for which we had come—meteorites. We had been there two or three earthly days—about seventy hours—before we saw our first one, for they were hard to see. It was a small black dot that passed us at terrific speed and was visible for perhaps two and one-half seconds. The nearest it came to the "Space-steed" was ten miles. I had seen the thing, as a matter of fact, while busy with the camera. Wad and Cogger had each had their eyes glued to small telescopes and so had missed it entirely.

"But it was going in the opposite direction around the earth," objected Wad. "Suppose they all go that way?"

"Impossible!" returned Cogger. "Must be some going in every possible direction —east, west, north, and south at any given moment. It would simply depend which side of the earth they approached when captured by its gravitation. What is more likely is that we are too high or too low. Let's keep watching a bit farther out." So we did and saw nothing for ten hours. Then we decided to try a little closer to the earth, and in the first half hour we counted thirteen—one of them quite large, perhaps a hundred feet through. They seemed to be mostly at a level about ten to twenty miles nearer the earth than our orbit and, after due calculation, Wad went over to the control board and turned on the power for precisely three quarters of a second, using an automatic relay for the purpose. The "Space-steed" gave a coughing bark, the floor trembled, and it was all over.

We rushed to the ports and observed nothing different, for our slight change of speed and direction could not be related to any fixed object except the earth far below. Nevertheless, our direction had changed and in the fourth hour thereafter Cogger gave an excited little yelp.

"There's one ahead! 'Bout a mile or so and we're catching up, I think. No we're not, we're . . . . no I was right, I think. Our speeds are almost the same."

● Wad rotated the gyro wheel so that the ship turned sideways to our course and two portholes bore on the object before us. Then we watched the pursuit. The sun rose and set twice before we caught up with it—ever so slowly—until at last we saw a small ten foot boulder a bare hundred feet away. It was ragged and broken and black, like the hopeless derelict of space that it was. We drew still closer to it until at last a slight jar told us that we had touched.

Wad had left the port and was busy opening a large closet set in the wall. From this he drew a diver's suit of heavy rubber, with helmet and oxygen tank complete. He tested the tank and then donned the outfit. Over to the door he climbed, looking grotesque among the spider-web ropes, and closed himself into the air-tight vestibule. I craned my neck at the window and Cogger, after a moment, turned the gyro until our port looked out at the meteorite. And there it was with Wad astride it! He caught our eyes upon him and waved clumsily.

I gave an exclamation of horror. "He'll be carried off on it!"

"Oh, no," said Cogger with a lift of one eyebrow. "We've captured that meteorite. From now on it will be always with us—you see if it isn't."

I peered out once more at Wad. This time he was holding on with one hand and striking the meteorite with a small hammer. A piece flew off and he grabbed for it and missed. I watched the chip sail up and up at perhaps two inches a second. It passed out of sight. But Wad had broken off another by then and, more suc-

cessful this time, scrambled over to the open outer door of the "Space-steed." I could not see him, but heard him in the vestibule closing the outer door and presently the inner door opened and he entered the cabin.

"It's only meteoric iron," he said when we had helped him out of the helmet, "but it's quite exciting to get a specimen this way!" and he held out the small jagged piece to me.

The meteorite remained outside the port hour after hour. "You know," I remarked, "if we collect a dozen specimens, we'll have drawn in a dozen of those things to us. After a month or two, we'll have enough to make a small moon and we can set up housekeeping!"

"They *would* be awkward followers, at that," agreed Cogger, eyeing our captive through the quartz window. "Like dogs, you know. You pet them and then you can't get rid of them. We'll have to figure out a more sensible way of examining the things, Wad."

"Well, a bullet fired at one would show how the stuff chips off. Also, the impact would tend to drive it away from us and us away from it. After all, what would neutron look like?"

"Dunno," replied Cogger. "Let's see if we can imagine. There'd be the protons full of positive charges, and no electrons to balance, so they wouldn't attract each other. Of course! The stuff would be an impalpable dust held into shape merely by its own gravitation, wouldn't it?"

"But we're looking for the inside of a star that exploded," I reminded him. "That wouldn't be exactly neutronic—it'd be merely nuclear and very dense."

"No—each proton would lack three or four shells of electrons, though. That would give a terrific valence and they'd share their electrons. As a matter of fact, each electron would be surrounded by greedy protons all sharing it, eh? So the outer surface of that molecule would be all proton, or negative. Each such molecule would have an excess of negative charge and would repel all the other groups. We'd still have a dust—a fine minute powder."

"Then there's nothing simpler. Fire a bullet at it and the dust would fly up. No dust, no neutron," put in Wadsley.

"Not quite, Wad. One other thing: this star stuff has been lying around here for anywhere from a thousand to a billion years. It has come into contact with ions in space, and with small meteoric particles. There'd be at the best an outer layer of partially-satisfied protons surrounding our mass. A bullet wouldn't start dust in that. It would probably penetrate it, though."

"Good! A bullet won't go far into that fellow we have outside! We can easily tell the difference. Not," added Wad, "that I believe we'll ever find any of your semi-neutronic, semi-imaginary star guts around here—not for a minute!"

"Remember the history of helium, Wad?" drawled Cogger.

"Certainly—what of it?" he answered.

"First, the existence of the element was argued from lights seen in a spectroscope; then it was actually discovered. Half a dozen elements were only reasoned about. Physicists argued that they might exist. Subsequently, they were isolated and identified. That's what we're doing. Nuclear matter does actually exist inside a star. Stars explode. Maybe we'll find some of the 'guts,' as you put it. Nothing unreasonable about it all, is there?"

"Oh, well! I didn't say it was unreasonable—only unlikely."

"Then," I added, "let's get looking around at some more meteorites."

"Precisely," said Cogger, and moved over to a port where he had fixed a small telescope. Wad went to another port to watch from there and I proceeded to prepare a meal, for none of us had eaten in hours.

● We saw plenty of meteorites after that. Most of them were tiny, and some too far away to risk wasting fuel to go after them. They were travelling in every conceivable direction around the earth and some at frightful speeds (relative to the

"Space-steed") so that I became nervous.

"What happens if one hits us head on?"

"We're done for, that's all. But don't worry, Trench. Chances are millions to one against it. It's true there must be many millions of meteors out here, but there's also millions of miles and we occupy, head on, only a circle twenty or so feet across. Still, the thing's possible—there's no denying it. If it happens, it happens—and that's an end to the voyage."

Wad grunted somberly from his porthole and I drew what comfort I could from odds of millions to one. Then Wad announced a likely meteorite and we put on a little power and got within half a mile. Cogger went into the vestibule with the rifle and closed the door behind him. After a minute there was a slight soundless shock. "He's fired," said Wad. "We can't hear it, because there's no air out there."

We watched the meteorite through the glasses and Cogger must have fired several times before I saw a tiny silver streak show on the black mass in the glass. I realized that the bullet had struck and glanced off. We were closer by now, too, and the rough jagged outline spoke iron from a quarter mile off. Cogger came inside and took off the helmet. "Ordinary iron," he said. "Let's find another!"

And so it went for two earthly weeks or more. A dozen times one of us put on a space-suit and fired the rifle at some tiny mass of matter, but always with the same result. It was necessary to balance the recoil of firing by shooting the same number of bullets in the opposite direction. We fell into a regular routine and I was beginning to count the days to our return. Every three quarters of an hour the sun sprang up from behind the earth—all blinding bright—and every three quarters of an hour later it sank down out of sight again leaving us to look out on the blazing pin-points that looked little like stars do from the earth.

And then I was aroused from a sound sleep suddenly by Cogger's voice. "Come and look, you two! What is it? A billiard ball? No, it's too large—what in God's name can it be?"

We clambered across the ropes and got to ports where we could look out. It was just before sunset and there—no telling how far off—was a grey, shining ball. It was perfect in outline—smooth and round. Cogger had got the range finder from the optical box and adjusted it hastily. Then he took the reading and looked up in amazement. "It can't be!" he muttered and did it all over again.

"That thing is ten miles away!" he announced. "It must be six or seven feet in diameter! Will you kindly tell me what a carefully manufactured globe is doing out here—a globe six feet through?"

We didn't answer, for we were occupied with staring at it through our telescopes. Then the sun vanished and the round outline of its mass occulted the stars until my telescope wavered and I lost its position in the darkness.

"Well," grunted Wad, "work your imagination on that one, my fine fellah!"

Cogger rubbed his forehead briskly with a handkerchief. "Let's see," he began. "It's too big for a cannon ball. Might have been a huge gun that shot a cannon ball out into space here, you know. But it's too big for anything in recorded history."

"Try again," suggested Wad sarcastically.

"Wait a minute . . . . why, of course!" exclaimed Cogger. "A globe is no strange shape in space. What price the stars and planets! The thing is a tiny planet, that's all. Started off in life as a liquid and has solidified slowly. So it assumed the natural globular shape in cooling. Why not?"

"Possible. Much better than your first attempt. But its size, man! It would cool too quickly."

"Might be a loose dust, rather than a liquid. Then it wouldn't have to cool at all," I suggested. "It would just settle into a ball under its own gravitation."

"Which would be mighty strong, wouldn't it!" grunted Wad scornfully. "Don't rot, Trench! A cloud of dust

would stay in a cloud for a million years."

"Ah-ha!" shouted Cogger in the darkness. "Eureka! A cloud of dust it is, my lad! The stuff's nuclear! That would take care of your gravitation, Wad!"

"What! Are you . . . . by the Lord, Harry, you may be right!"

We waited impatiently for three quarters of an hour until the sunlight returned and then rushed to our telescopes. The grey ball was still there—and had drawn a mile or two nearer in the darkness. We discussed putting on power, but Wad pointed out that at this rate we would catch up to it in a dozen hours and might as well conserve our fuel. When it was a mile away, we went out into the vestibule one after the other, where we opened the outer door and tried pot shots at it with the rifle. But watch as we might, we could see no perceptible hits on its surface, even through the telescopes. "Proves nothing," argued Cogger optimistically. "In fact, it fits the theories. Those bullets are actually penetrating the stuff—you see if they aren't. And of course we can't see a bullet hole a mile off."

But as the hours passed, we seemed to be gaining speed toward the mysterious object. Finally, when we were only a few hundred yards from it, there could be no doubt of this. Cogger had been checking our course anxiously in the range finder and suddenly he swung around and shouted, "Get on to those controls, Wad! We'll bump hard at this rate!"

Wad stared a second before he comprehended and I rushed to the port, where even to the naked eye, the smooth grey ball seemed to be rushing toward us. Our captive satellite floated with us as we went, just aft the port. Then as I looked, I felt and heard the vibrant roar of a second's firing. The "Space-steed" trembled and the neutron ball slowed down and began receding. But the startling appearance was the sight of our six-foot meteorite, which deserted us at last, brushed past the quartz porthole and plunged a few seconds later against the mysterious globe now a quarter of a mile distant. The shape of the globe was distorted by the impact and the meteorite buried half its bulk in it, as though it had been soft putty. I seized the telescope and observed that a minute cloud of dust had risen at one point and that here what seemed to be a soft pliable lead covering had been torn and exposed its ragged edge. And at this point, I thought I saw bubbles forming.

Cogger had also observed the happening. He shouted for Wad to come to the port, which he did, crawling through our rope thicket. "See! shouted Cogger. "This might be dangerous stuff to touch against, but that blessed meteorite will make a fine solid point to which we can anchor the 'Space-steed!' "

Wad looked a few seconds, nodded, and climbed back to the controls. A split second of firing started us slowly toward the mass and Cogger kept his eyes glued to the range finder. "You stay right there, Wad!" he called. "Just before we strike, I'll signal you to put on a burst of retarding power—probably not more than a half second—just enough to break our collision."

● There was a two-minute silence and I watched the approaching mass until it seemed just upon us. Still no signal could be seen and I was growing nervous, while the whole porthole was darkened by the ten foot hybrid shape beside us in space. Then, with a bare two yards to go, Cogger snapped out "Fire!" and a brief bark from the motor answered him. There was a faint scraping sound, and at the same time I saw an enormous spark of static electricity leap from us to the meteorite. It startled me.

"Here we are, you doubting Thomas!" said Cogger, proudly making his way to the locker where the space-suits were stored. We helped him into his helmet and closed the inner door on him when he squeezed into the closed vestibule. Then Wad and I clung to the port to watch, rotating the ship slightly so that we could get a clear view. After a second or two, Cogger's form appeared within arm's

reach just outside our window. He clambered cautiously over the black meteorite and seemed to be studying the substance in which it was embedded. I saw him point one finger at the place where the nuclear powder was exposed to the meteor and I observed a tiny mass of bubbles there—like sulphuric acid working on zinc. Then he paused suddenly and his gloved hand rested on the meteor as though feeling its temperature. Finally he reached over and touched one finger of the glove to the dark grey powder and brought it before his goggles to study it at close range. We waited wonderingly, supposing that he would scrape up a sample of the powder and bring it in for analysis, but instead he jumped as though he had been bitten. I saw him frantically brush his finger against the meteorite and then rub his gloves together as though to remove something. Then he turned about and climbed out of sight and we heard the outer space-door open and close.

The inner door opened like a cyclone and his frantic motions induced us to rush to his assistance. As soon as his helmet was off he cried out, "Get a knife! Get a knife!" and he beckoned to be assisted out of his space suit. I went for the knife and I heard him yell at Wadsley. "Don't touch those gloves, man! This stuff is high-power, sure-fire, touch-me-not *death* —I tell you!"

We cut his gloves off at the wrists, dropping them at his orders into an aluminum dinner plate. Even in that short time I saw what he meant. The gloves were swelling up like toasted marshmallows and turning yellowish green. There was no smoke nor fumes, but a minute frothy bubbling. As we watched, the gloves grew and grew until before we knew it they were the size of a football —both of them merging into one shapeless mass. And still they grew. I felt strangely sleepy and at the same time so excited (as I thought) that I was panting for breath. I looked up to see both my companions similarly laboring with their respiration and sweat stood on Wad's brow.

"Is there something—(gasp)—wrong with the air?" I asked.

Cogger looked up at me and clapped one hand to his forehead. "Dolt! Idiot that I am!" and he made his way to the air supply regulator against the wall and turned a handle. "Get on a space-suit, Trench! You'll have to throw that stuff out at once—don't ask questions, man! Hurry!"

I did. I was ready in less than sixty seconds and raised the plate in my gloved hands, sidled cautiously into the space vestibule, and managed to open the outer door when Wad had closed the inner one. I gave the plate a heave and saw it careen out steadily minute after minute away into space. When I returned, I demanded the meaning of it all.

"The meaning was just plain ordinary death, that's all!" said Cogger grimly. "That nuclear matter — why it's *greedy* for electrons. It's only one billionth of the size it'd like to be! It'll take electrons out of your finger as soon as anywhere else—out of your eyes, your *brain,* if it can! It was busy combing with the rubber in those gloves and not content with that, it grabbed our atmosphere here in the cabin. We'd have suffocated if I hadn't turned on fresh oxygen. I had you throw it out before it could eat through that aluminum plate. It seems to go slower on metal than on other things, but if it had touched the floor it would never have stopped until the whole ship was transformed into whatever damned element it is—must be something beyond the ordinary periodic table altogether — a super-radium sort of stuff."

"But why did you ever bring it in here, fellah!" demanded Wad.

Cogger turned to him. "Listen! I touched one finger to it. That's *all!* Understand? There couldn't have been more than a few grains of dust that clung to it. I thought such a small amount wouldn't matter, but when it started burning my finger, I changed my mind."

Wadsley turned to the porthole and gazed reflectively out at the great lump a few feet from his eyes. "Well, fel-

lah! Here's your dense nuclear star-guts. You've captured it in fair fight—conqueror with the bow and spear and all that. Now that you've got the stuff, what are you going to do with it? Seems to me it's about as useful as a hungry tiger in a chap's bedroom.

"Hm'm! Well . . . . I made certain preparations, as a matter of fact, against the chance that we actually did find some. But . . . . I didn't quite realize how peculiarly poisonous it is to do business with. Let's have a meal before we start trying things."

"And suppose the hull of the 'Space-steed' just brushed against it!" I put in nervously.

"Yes," agreed Cogger. "We ought to take care of that eventuality first."

CHAPTER IV

Through the Ring

● We broke out a new space-suit for Cogger out of stores (his old was ruined) and we all three went out, one after the other, and stood upon the 'Space-steed' to observe how she was lying. We found that, fortunately, she was in contact with two projecting bosses of the iron meteorite and seemed solidly enough balanced there. We each carried an automatic pistol belted outside our suits. Wad drew his and fired a shot the recoil from which sent him up, slowly spinning, until he was a hundred feet away. Slowly he began falling back, and I saw with alarm that he would touch the ball of nuclear dust! Another shot from his pistol, however, brought him over to the space-ship and he rebounded sharply from it and fell against the safe iron of the captive meteorite.

We had worked out a crude language—a few simple signs—for conversing in space. Wad now raised one thumb, signifying that everything seemed all right. Cogger stepped into the open vestibule and closed the door. We waited for five minutes before he emerged carrying three short beams of aluminum. These he fixed with bolts to form a tripod, so that the "Space-steed" was held on three points against the iron of the meteorite. With this extra precaution we all returned inside.

After we had made our meal—too excited to notice what we were eating—we held a brief discussion as to the first experiment. There was a noticeable gravitation in the ship now, due to the close presence of the mass of nuclear matter. It felt unbelievably comfortable, though we only weighed a small fraction of our normal earthly poundage. "Well," said Wadsley, "here we are beside this miracle stuff—but we still seem to be in the same old set of dimensions. No change that I can notice."

Cogger frowned fiercely. "Not yet. It's not very much star nucleus, Wad. And it may not be dense enough — probably isn't. Still . . . . if we could get right into contact with it . . . . ."

"But if it touched us we'd not live an hour!" I prompted.

"True! So we won't touch it. In fact, I planned that we would never touch it when I made preparations."

"What *are* these preparations you talk about?"

"Some things I've stowed in the dead space between the ship's inner and outer hull. Now, wait a moment . . . . yes . . . . we'll try a pipe first, I think. Look before leaping."

"Did you bring any pipe?" put in Wad, looking vaguely around the cabin.

"Yes. Between the hulls. Let's get on our suits and see what we can do."

"But . . . . just how?" I asked, being puzzled to imagine how anything at all could be done with such dangerous stuff as we had outside.

"We'll drive an aluminum pipe through the soft nuclear mass. Then in the twenty minutes or so that will remain to us before the metal is eaten through, we'll be able to look through the pipe and . . . . well, light waves may be bent—oh, anything! We'll try it and see, that's all."

So we did. It took some time, for first we had to plug the pipe, then get it awkwardly through the vestibule (for it was ten feet long) and finally drive it through very carefully. Not one particle of dust could we afford to get on our suits, remember! And as for the driving of the pipe, it was a strange business. You may imagine us wielding a sledge hammer, standing on the embedded meteorite, eh? You'd have had us flying off violently into space with each blow, doing it that way! The way Wad went at it was to hold on to the pipe end and hit blows with a light hammer and even then he lost his balance several times and once his hand slipped and the hammer landed on the pipe unheld, so that he bounced up into space and had to fire his automatic to come back. As a matter of fact, I was surprised that hammer blows had any effect. The hammer weighed almost nothing, you see. It worked, however. Cogger told me afterwards that the mass of the hammer was there, even if its weight didn't make that mass apparent.

Finally the pipe poked through at the other end and the plug had to be taken out—all covered with neutron dust and bubbling with heat. It was a cover plug and fairly loose. Cogger pushed it off with a light rod of aluminum and then let the rod (contaminated, you see) fall on the grey surface where it stayed—beginning to decompose almost at once. Our job was done and at the clean end of the pipe, which projected eighteen inches, we clustered and one after the other peered through it. We could not talk to each other, fastened up in space helmets as we were. Cogger and Wad took what seemed altogether too long a time over their turns. Finally I was able to clap my eye to that three-inch orifice. I expected, of course, to see the dark background of space with stars set in it—exactly what was really there.

But I didn't! I couldn't see anything at first. Finally I made out a sort of glow rather like looking up at the surface of the water when you are diving. The dull light was purplish blue and in quiet motion. There could be no doubting the mystery of the thing. The inside of the pipe showed plainly for a foot or two—dull silver sheen and all. But toward the end of the pipe generally the things you saw were not what you knew must be there! I stood up and looked over the top of the meteorite to make sure that the old familiar sky was still in place—I was that much rattled!

Then Cogger brought a stick of balsa wood from the ship—ten feet of it. This he began poking methodically down the pipe and beckoned to Wad and myself to observe it when it emerged from the other end. We went around gingerly and after a few seconds out it came. We both seized hold and drew it carefully through. The stick slid easily into the pipe; it was not bent or twisted in any way; evidently the pipe was straight and open. In constantly increasing amazement, we soared back by means of revolver shots bringing the light stick with us. Here was mystery on mystery! The stick passed through, but vision—*something* happened to vision! Of course we could not express our thoughts to each other, but after a few moments of stillness, Cogger went back through the vestibule and returned with a sheet of paper. By signs, he indicated that I was to hold the paper over the other end of the pipe while he would fire a bullet through. I wanted to argue about it, for if the balsa stick went through, why not a bullet? But there was no way I could talk out there in the space-helmet, so I went around and held the paper over the open hole, being careful that no part of my body would be in the line of fire. This was not easy, for the only thing I could hold to was the end of the pipe itself. My body would constantly float by imperceptible degrees back toward my hand where it held the pipe-end. Time dragged on minute after minute and I was becoming cramped in my position when Cogger appeared beside me and beckoned. I let go the paper, wondering why he had not shot his bullet, and followed him inside the ship where we removed our helmets.

"Why didn't you fire?" I asked at once.

Cogger raised his eyebrows. "I did, fellah! Fired six shots!"

"But . . . . but the paper . . . ."

"I know," he cut in. "Mysterious, eh? The thing's impossible, of course—rank silliness, eh, Wad? Only, you know, it really happened so . . . . what's your guess?"

● We sat in silence for a few minutes.

Cogger grinned around at us until finally Wad burst out, "Oh, act your age! I can guess my way through the puzzle as well as you can—the thing that stumps me is how to make use of it!"

I was more in the dark than ever. "What puzzle?" I asked. "It's plain enough to me that that pipe is queer, but . . . . what of it? We knew something strange would happen, so why be surprised?"

"Slay him, Wad!" grinned Cogger. "Can't you see that the bullets and light go through the pipe in one fashion and the stick goes through in another?"

"Surely. I suppose space is bent in the pipe, as you said it might be. The stick goes through slowly and follows the bends. The bullet goes too fast and strikes the side."

Cogger gaped at me and even Wadsley stopped racking his brain to stare. "Everything just exactly backward," he commented and went off once more into his silence. Cogger explained. "If the stick followed the bends it would never have come out the other end—but continued on out of sight into another set of existences. That's what the bullet did. That's what light seems to have done. Why, Trench? Well, consider what we were doing—getting close to a dense mass so that gravitation would be enormous. Now gravity increases as the square of one's 'nearness' (if I may put it that way) and also according to the mass. What's mass? Well, you know the latest theories, surely! Mass increases as the square of its velocity. Anything travelling at the speed of light, for instance, would have infinite mass. Well, take light itself—it has mass though its physical existence, if there is such a thing, must be the tiniest mote in creation. And the bullet, its mass is enormously increased by its speed. The stick, on the other hand, barely moved a foot a second. This dusty nuclear stuff outside is evidently not quite dense enough to break dimensions. It can only do so if the factor of speed enters . . . ." he turned to Wad. "That's about the way you figure it, isn't it?"

Wad nodded. "And not only that, but if we want to skip off into some new set of dimensions, we must do so at a thousand feet a second or more, Cogger. I've got that far. But how are we going to arrange the details of that? That's where I'm stuck. How about you?"

Then out came the slide rules and the small draughting board and I lost the thread of argument. I busied myself preparing the next meal—a ten minutes' job—and when I called "Come and get it!" Cogger and Wad had done their figuring.

"It's really the simplest thing in the world!" exclaimed Wad.

In answer to my indignant demands for enlightenment, he paused between bites to give an outline of the plan. First, a metal frame large enough for the whole ship to pass through. Second, draw the ship back a few miles and plunge forward at high speed right through the frame, which, of course, would be surrounded by the nuclear dust. And there we'd be, said Wad, and went on eating with simple gusto.

"But wait a m o m e n t!" I cried. "Where'll you get your metal? Are we going back for it? We'd never find this meteoric stuff again in a million years—we might never find another meteorite like it, for I think we've been exceedingly fortunate."

"Of course," grunted Wad through a mouthful, "must make our test now . . . . cut the outer hull off the ship . . . . just the right size . . . . inner skin plenty strong . . . . pass another package of cheese, will you, Cogger?"

And that's what we did. With our enormous reserve of oxygen and gasoline, we

easily rigged two copper tubes from the tanks which burned furiously where they joined. It was a crude oxy-acetyline torch. We took turns cutting away the welded system of trusses that joined the inner and outer shell of our ship and then cut free the tapering nose and stern of the outer hull. The central portion—about ten feet of it — was what we planned to use. We capped the nose and tail back on the inner hull, which they fitted without intervening space, so that our ship was nearly as strong as before, but without an airspace between. The total diameter, however, was some five feet less outside than it had been, so that our entire ship could pass through the aluminum ring we had cut out. This work occupied about ten earthly days and was easily, though laboriously, completed.

Our next task was more difficult. It would be necessary to insert our ring through the core of the nuclear meteorite. Of course, that would be impossible, so we attempted the equivalent—to pile all the nuclear dust around the metal ring. The difficulty was that from the time we started, not more than an hour or so might elapse before we plunged through the gravitational field so created. After that interval of time, the dust would have eaten through the metal ring and we would be no better off than before we started.

"How many extra space-suits are there?" asked Wad suddenly. I replied that we had provided for an extra one each, but that Cogger's had already been used. "Two left, then," he grunted. "Well, we might take a chance, eh, Cogger?"

"Hold hard, fellah!" was the startled reply. "We'd have about sixty seconds—maybe two minutes at the most before we'd have to get out of those suits and throw them away if that dust got on 'em!"

"H'm-m! Well, how about shovels, then? We could shovel carefully and then throw away the shovels."

"Not enough time. We'd never finish," I remarked. "The first shovelful would have eaten through the aluminum ring before the last was placed on."

"Sa-a-y! We've ten feet of ring!" said Cogger suddenly. "Don't need more than five. And the tail end of the ring is of less diameter than the fore-end. How about cutting the ring in two, shoveling the stuff on the largest piece and then inserting the smaller ring inside it to double our time allowance?"

"Well—it might do," spoke up Wad. "It's about all we can think of with our limited supplies here. We'll give it a try, anyway."

"All right," I agreed dubiously. "But for God's sake, you chaps be careful, won't you? This whole idea grows wilder and wilder as we go along. Suppose we get it fixed up and do plunge through at a half mile a second or so—what will we come out in on the other side? How'll we ever get back? I'm not at all sure that we ought to jump right into this thing. As a matter of fact," I added, "I move we call this whole thing off and go back to earth!"

Wad pounced on me. "What!" he demanded. "Leave this just when all the impossibilities have been overcome?—when we've actually had the colossal luck to find a dense meteorite—chances one in ten million, perhaps! — when on top of that, we've discovered that it actually does warp dimensions to the breaking point—makes a bullet vanish—makes starlight vanish! Why, man, I'll see you half-way to Hades before I'd give up now!" and he stood glaring indignantly down at me.

Cogger grinned wryly. "The zeal of the convert exceeds that of the teacher!" he remarked. "But I'm glad, Wad, old fellah! And you ought to be ashamed of yourself, Trench."

"But where are we going, Cogger?" I expostulated. "And how are we going to get back?" and I peered nervously out the port-hole at the great shining aluminum ring we had cut away from our outer hull, floating silently against the quartz pane.

"We-e-ll! Of course . . . . no, I can't answer those questions. Where was Columbus going? His crew wanted to know

that—mutinied to force him to return to safe old Europe. He didn't know—thought he was going to China, as a matter of fact. But he went on and discovered something new—rather important, don't you think?"

"But, Cogger! He knew he could sail back, don't you see? We can't *do* that! Just for one thing, this ring covered by nuclear dust is in our present set of dimensions—and not in the possible other existence we would charge into. We'd never find it again. Then for another thing, put the case backward; suppose we were going to change from some other existence into this present one. Suddenly we are there, and suppose that we were to materialize right in front of a meteor going at half a mile a second—suppose we materialized in the middle of the earth? We'd not live a second! What would be the use of it?"

"By George," said Wad, "the man's right! It's takin' a long, long chance!"

● Cogger's eyes twinkled. "Zeal cooling down, fellah? All right, then, let it go. Only we'll fix up this double ring of metal covered with nuclear matter and just see what we can see, if you don't mind. That's the least we can do."

"And . . . . after that?" I questioned nervously.

"Then we'll go home and, maybe, build a rocket ship that'll take us to Mars or some other common ordinary every-day sort of place. We'll sober down and visit Venus — just three steady conservative scientists!" And Cogger grinned. "After all, it was expecting too much—to really trip off into a new set of dimensions! Too much . . . . yes . . . ." and he fell silent and sighed. We were all silent for a while. Wad's brow became furrowed deeply. "Oh, I don't know," he grunted finally. "After all, what of it? I'm game to go, Cogger, only . . . . well, Trench here has some rights." Cogger looked up at these words, but my imagination had been busy painting possible sudden deaths and I was adamant. "Absolutely nothing doing, if my vote has any weight," I said grimly, and there was an uncomfortable pause. Then Cogger suggested we get started on fixing up the ring, at least, and then we could set off for home.

It was a difficult job. We had to make the shovels out of sheet duralumin and the least detail had to be planned out well in advance, so that once we started, there would be no dangerous delay. We sliced the ring in half and had two metal bands five feet wide which we tucked one inside the other to make one band. Its diameter was about twenty-five feet. That of our ship was twenty. So far it was plain sailing. Next we had to fasten this ring to the iron meteorite and rig a tripod of three metal beams to support the ship against the ring at a great enough distance to protect her from the dust. These beams had to touch the ring loosely so that we could pull away quickly when the time came. Last of all, we made thick aluminum boots for ourselves which we donned over our rubber space-suit legs and were ready.

Cogger, Wad and myself, armed with shovels, stood on the iron meteorite and commenced shoveling, furiously and at the same time, carefully. Each shovelful of dust had to be laid carefully on the smooth aluminum of the ring so that it would not rebound too violently. Minute after minute we worked, tramping gingerly in the stuff. It was only about six or seven cubic yards in all, but it took us more than ten minutes to get it done and by that time my feet were growing uncomfortably warm. Cogger was not satisfied and insisted on spreading it out as evenly as he could and this took another five minutes, by which time the very skin was blistering and the metal overshoes I wore were swollen and formless things. We had miscalculated sunset, on top of all, and were plunged in darkness before we were half through—the starlit, glimmering darkness of space. We could see, but rather poorly. I saw Cogger finally throw his shovel violently away and Wad and I followed suit. Then we reached the metal tripod that held off the ship and here we all three of us kicked off our

sizzling, bubbling boots and dragged ourselves to the vestibule.

Wad was first in and I followed. Cogger appeared last and I gave a great cry, for his right hand was ten inches thick and the rubber glove white and frothy. We rushed to his assistance and cut the glove at the wrist, above the infection, and Wad held it with the scissors and went into the vestibule with it to throw the thing away. I had Cogger's helmet off by now and his first words were "Get me the surgical box—quick. Can't you see, man? It's got my finger!"

I moved quick, I can tell you, and—fortunately it was only at the tip—I removed his middle finger at the second joint. It was a clean operation and could not have taken three minutes, from start to bandage. Wad took the tray with knife, bandage and finger and threw them all after the glove. As for Cogger, he grinned through the pain, took a half tumbler of brandy through a straw, and said, "Let's see what's doing! That ring won't hold up, forever, you know!"

We made sure that he really felt up to it—it was remarkable in so frail a man, but courage is always a remarkable thing—and then rushed to the port. In the darkness we could see little. One thing, however, was plain. The stars shone brilliantly all around that mass beside us. But through the twenty-five foot circle enclosed by the nuclear dust no stars shone. There was light there—the same dim, formless purple that we had seen through the three-inch pipe. Wad brought the electric torch and we aimed its powerful beam through the hole in space. Absolutely nothing happened. The side of the metal nearest us was lit up brightly, but inside that five-foot deep tunnel the purplish light continued as vague and dim as ever. I wandered over to the other portholes and looked out upon the sky. I could see below me the huge outline of the earth blotting out all stars implacably. It seemed to me that it was larger and occupied more of the horizon than usual, tonight. And then, as I looked, the great shadow drifted slowly sidewise and stars rolled into view. I was startled, knowing that the ship must have moved, but wondering why. At the same time I found myself pressing against the rope supports of the cabin as though—yes, precisely as though I were going to fall up into the opposite wall of the vessel.

Wad gave a cry, inarticulate and alarming, and Cogger shouted, "Get to the controls, Wad! Hurry! We're falling onto the earth!"

"Why should we?" I asked. "Nothing's happened, has it?" But they were both too busy to answer me. The next few minutes were completely mysterious at the time, but afterwards we reasoned the thing out and I know what happened. Wad, in the dark, was trying to rotate the gyro wheel that should swing the ship around tail towards the earth. Once in this position we could put on power and break our fall. But the attraction of our metal ring loaded with nuclear dust proved too great. We remained as we were, falling sideways down toward that ever-looming shadow that was swallowing the whole heavens below us. When Wad finally gave the job up as hopeless, we knew we were already in the atmosphere for its resistance was like deceleration and pressed us in the direction of fall.

"The wings!" cried Cogger. "Give me a hand, Trench! We'll pull this lever and project our wings, then we can glide down in safety."

I got to his side after nearly choking myself in the maze of guide ropes and together we heaved on the wing lever, but could not budge it. We called for Wad to help us and he flicked on the small emergency lamp and added his great weight to ours. We tugged and strained with the desperation that only panic can give to muscles. The lever gave perhaps an inch and then threw us back again. Cogger stopped and stood panting a moment.

"No use, fellah!" he said to Wad. "Don't you see? The atmosphere is pressing against the wings as we rush down. We'll never get them stretched out.

Trench, old man, I'm sorry . . . . I'm afraid we're done for!"

I rushed in a panic to the porthole and peered out at the now starless darkness and noted a faint silver line at the curved rim of it. The sun was rising. We would never see it! We were, due to our greater air resistance, now falling more slowly than the nuclear mass, which was one or two hundred yards below us. Below that —fearfully close!—lay a sea of clouds and I knew that at most a few miles below the clouds the solid rock awaited the fearful impact! Our speed was terrific and the air stream boomed and screamed against the ship's nose, which began heating up the cabin to a stifling temperature. A second passed and another and we were among the clouds. The sun was rising and the landscape below lay revealed—flat brown country, though in what continent or latitude we had no means of telling. My heart was pounding at the back of my throat, choking me, and I turned to clasp the hands of my two companions for the last time.

But Cogger suddenly leaped to the controls which actuated the air rudder and cried, "Idiot! I'm not fit to be killed! Why, we've a chance—don't you see! Get to the ports, you two, and give me the exact direction of that metal ring covered with star-guts! Fool! Ninny! Why didn't I think? If we can plunge through *it* we won't plunge into the earth at all, but into . . . . some other set of dimensions!"

My slow wits did not begin to get the idea, and I turned to the porthole in hopeless disbelief. There were only a few seconds left, now, before we would strike. The ring was almost a quarter-mile off and falling straight before us, as nearly as I could tell. The chase continued down and now I could make out slight valleys and ridges in the landscape and a little clump of palm trees. Suddenly Wad cried out. "Give her full power now, Cogger!" And the rocket roared so that our plunge became a screaming whistle. I saw the ground loom instant and fearful. I saw the metal ring strike flat, so that the open end of it faced us welcomingly. Then I glanced away (with fists so tightly clenched that the nails cut my palms) and glimpsed Cogger's white, set face and beyond him a reddish glow from the superheated metal nose of our vessel. Then the light of the rising sun was suddenly quenched and I gulped out "Oh God!" and shut my eyes—waiting—waiting. . . .

(What happens when the space-ship plunges through the metal ring into what should be another set of dimensions? Learn all about it in next month's thrilling conclusion!)

MAN WILL REACH MOON

IN an article distributed by the United Press on July first, Dr. Heber D. Curtis, observatory director at the University of Michigan, stated that no one can really tell whether there is life on other planets or not, despite conjecture, until someone actually goes to one to either verify or disprove this fantastic conception. It would be narrow, however, to suppose that our solar system is the only one in over a quintillion (one followed by eighteen ciphers) possibilities. Dr. Curtis believes that in the next two centuries, sometime, man will devise some kind of a rocket-ship, powered by trinitrotoluol, popularly known as TNT, that will make the round trip to the moon.

Even the two-hundred-inch super-telescope now being constructed for a California observatory will not be able to definitely determine whether there is life on any of our sister planets, according to Dr. Curtis. "A two-thousand-inch telescope, could one be made," he stated, "would not enable us to make out any works of a creative nature on the surface of a neighbor planet."

However, Dr. Curtis also granted that no astronomer is able to prove that there is no extra-terrestrial life, so the question will be open to debate for a long time to come.

(Illustration by Paul)

"Through the metal throat of its victim crash steel teeth; the blood of its prey—the gasoline, that is—is drained into its stomach, its gas tank."

THE IDEAL

By STANLEY G. WEINBAUM

● Who is the greatest scientist that ever lived? Einstein? Galileo? Edison? If you have read the author's "The Worlds of If" in the last issue, you will know that it is van Manderpootz. He is the greatest scientist of all history!—he even admits it himself.

We find the great van Manderpootz again in the present story—the second of the series concerning the association with this colossal intellect of Dixon Wells, an ordinary mortal, who is in such a habit of always being late to every affair that even a watch runs slow as soon as he buys it.

The same entrancing humor, that can't-put-it-d o w n-till-you're-finished effect, pervades Mr. Weinbaum's present effort with the same masterful quality of his epic-making "Tweel" stories.

We suggest that you have this story retyped so that you will not wear the magazine out re-reading it so many times. Mr. Weinbaum has definitely established himself as science-fiction's master of humor—not slap-stick comedy or burlesque—but honest-to-goodness, wholesome, subtle humor.

● "This," said the Franciscan, "is my Automaton, who at the proper time will speak, answer whatsoever question I may ask, and reveal all secret knowledge to me." He smiled as he laid his hand affectionately on the iron skull that topped the pedestal.

The youth gazed open-mouthed, first at the head and then at the Friar. "But it's iron!" he whispered. "The head is iron, good father."

"Iron without, skill within, my son," said Roger Bacon. "It will speak, at the proper time and in its own manner, for so have I made it. A clever man can twist the devil's arts to God's ends, thereby cheating the fiend—*Sst!* There sounds vespers! *Plena gratiâ, ave Virgo—*"

But it did not speak. Long hours, long weeks, the *doctor mirabilis* watched his creation, but the iron lips were silent and the iron eyes dull, and no voice but the great man's own sounded in his monkish cell, nor was there ever an answer to all the questions that he asked—until one day when he sat surveying his work, composing a letter to Duns Scotus in distant Cologne—one day—

"Time is!" said the image, and smiled benignly.

The Friar looked up. "Time is, indeed," he echoed. "Time it is that you give utterance, and to some assertion less obvious than that time is. For of course time is, else there were nothing at all. Without time—"

"Time was!" rumbled the image, still smiling, but sternly as the statue of Draco.

"Indeed time was," said the Monk. "Time was, is, and will be, for time is that medium in which events occur. Matter exists in space, but events—"

The image smiled no longer. "Time is past!" it roared in tones deep as the cathedral bell outside, and burst into ten thousand pieces.

● "There," said old Haskel van Manderpootz, shutting the book, "is my classical authority in this experiment. This story, overlaid as it is with mediaeval myth and legend, proves that Roger Bacon himself attempted the experiment—and failed." He shook a long finger at me. "Yet do not get the impression, Dixon, that Friar Bacon was not a great man. He was—extremely great, in fact; he lighted the torch that his namesake Francis Bacon

took up four centuries later, and that now van Manderpootz rekindles."

I stared in silence.

"I n d e e d," resumed the Professor, "Roger Bagon might almost be called a thirteenth century van Manderpootz, or van Manderpootz a twenty-first century Roger Bacon. His *Opus Majus, Opus Minor,* and *Opus Tertium—*"

"What," I interrupted impatiently, "has all this to do with—that?" I indicated the clumsy metal robot standing in the corner of the laboratory.

"Don't interrupt!" snapped van Manderpootz. "I'll—"

At this point I fell out of my chair. The mass of metal had ejaculated something like *"A-a-gh-rasp"* and had lunged a single pace toward the window, arms upraised. "What the devil!" I sputtered as the thing dropped its arms and returned stolidly to its place.

"A car must have passed in the alley," said van Manderpootz indifferently. "Now, as I was saying, Roger Bacon—"

I ceased to listen. When van Manderpootz is determined to finish a statement, interruptions are worse than futile. As an ex-student of his, I *know.* So I permitted my thoughts to drift to certain personal problems of my own, particularly Tips Alva, who was the most pressing problem of the moment. Yes, I mean Tips Alva the 'vision dancer, the little blonde imp who entertains on the Yerba Mate hour for that Brazilian company. Chorus girls, dancers, and television stars are a weakness of mine; maybe it indicates that there's a latent artistic soul in me. Maybe.

I'm Dixon Wells, you know, scion of the N. J. Wells Corporation, Engineers Extraordinary. I'm supposed to be an engineer myself; I say supposed, because in the seven years since my graduation, my father hasn't given me much opportunity to prove it. He has a stronge sense of the value of time, and I'm cursed with the unenviable quality of being late to anything and for everything. He even asserts that the occasional designs I submit are Late Jacobean, but that isn't fair. They're Post-Romanesque.

Old N. J. also objects to my penchant for ladies of the stage and 'vision screen, and periodically threatens to cut my allowance, though that's supposed to be a salary. It's inconvenient to be so dependent, and sometimes I regret that unfortunate market crash of 2009 that wiped out my own money, although it did keep me from marrying Whimsy White, and van Manderpootz, through his subjunctivisor*, succeeded in proving that that would have been a catastrophe. But it turned out nearly as much of a disaster anyway, as far as my feelings were concerned. It took me months to forget Joan Caldwell and her silvery eyes. That was just another instance when I was a little late.

Van Manderpootz himself is my old Physics Professor, head of the Department of Newer Physics at N. Y. U., and a genius, but a bit eccentric. Judge for yourself.

"And that's the thesis," he said suddenly, interrupting my thoughts.

"Eh? Oh, of course. But what's that grinning robot got to do with it?"

He purpled. "I've just told you!" he roared. "Idiot! Imbecile! To dream while van Manderpootz talks! Get out! Get out!"

I got. It was late anyway, so late that I overslept more than usual in the morning, and suffered more than the usual lecture on promptness from my father at the office.

● Van Manderpootz had forgotten his anger by the next time I dropped in for an evening. The robot still stood in the corner near the window, and I lost no time in asking its purpose.

"It's just a toy I had some of the students construct," he explained. "There's a screen of photoelectric cells behind the right eye, so connected that when a certain pattern is thrown on them, it activates the mechanism. The thing's plugged into the light-circuit, but it really ought to run on gasoline."

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* "The Worlds of If"

"Why?"

"Well, the pattern it's set for is the shape of an automobile. See here." He picked up a card from his desk, cut in the outlines of a streamlined car like those of that year. "Since only one eye is used," he continued, "the thing can't tell the difference between a full-sized vehicle at a distance and this small outline nearby. It has no sense of perspective."

He held the bit of cardboard before the eye of the mechanism. Instantly came its roar of *"A-a-gh-rasp!"* and it leaped forward a single pace, arms upraised. Van Manderpootz withdrew the card, and again the thing relapsed stolidly into its place.

"What the devil!" I exclaimed. "What's it for?"

"Does van Manderpootz ever do work without reason back of it? I use it as a demonstration in my seminar."

"To demonstrate what?"

"The power of reason," said van Manderpootz solemnly.

"How? And why ought it to work on gasoline instead of electric power?"

"One question at a time, Dixon. You have missed the grandeur of van Manderpootz's concept. See here, this creature, imperfect as it is, represents the predatory machine. It is the mechanical parallel of the tiger, lurking in its jungle to leap on living prey. *This* monster's jungle is the city; its prey is the unwary machine that follows the trails called streets. Understand?"

"No."

"Well, picture this automaton, not as it is, but as van Manderpootz could make it if he wished. It lurks gigantic in the shadows of buildings; it creeps stealthily through dark alleys; it skulks on deserted streets, with its gasoline engine purring quietly. Then — an unsuspecting automobile flashes its image on the screen back of its eyes. It leaps. It seizes its prey, swinging it in steel arms to its steel jaws. Through the metal throat of its victim crash steel teeth; the blood of its prey—the gasoline, that is—is drained into its stomach, or its gas-tank. With renewed strength it flings away the husk and prowls on to seek other prey. It is the machine-carnivore, the tiger of mechanics."

I suppose I stared dumbly enough. It occurred to me suddenly that the brain of the great van Manderpootz was cracking. "What the—?" I gasped.

"That," he said blandly, "is but a concept. I have many another use for the toy. I can prove anything with it, anything I wish."

"You can? Then prove something."

"Name your proposition, Dixon."

I hesitated, nonplussed.

"Come!" he said impatiently. "Look here; I will prove that anarchy is the ideal government, or that Heaven and Hell are the same place, or that—"

"Prove that!" I said. "About Heaven and Hell."

"Easily. First we will endow my robot with intelligence. I add a mechanical memory by means of the old Cushman delayed valve; I add a mathematical sense with any of the calculating machines; I give it a voice and a vocabulary with the magnetic-impulse wire phonograph. Now the point I make is this: Granted an intelligent machine, does it not follow that every other machine constructed like it must have the identical qualities? Would not each robot given the same insides have exactly the same character?"

"No!" I snapped. "Human beings can't make two machines exactly alike. There'd be tiny differences; one would react quicker than others, or one would prefer Fox Airsplitters as prey, while another reacted most vigorously to Carnecars. In other words, they'd have—*individuality!*" I grinned in triumph.

"My point exactly," observed van Manderpootz. "You admit, then, that this individuality is the result of imperfect workmanship. If our means of manufacture were perfect, all robots would be identical, and this individuality would not exist. Is that true?"

"I—suppose so."

"Then I argue that our own individuality is due to our falling short of perfec-

tion. All of us—even van Manderpootz—are individuals only because we are not perfect. Were we perfect, each of us would be exactly like everyone else. True?"

"Uh—yes."

"But Heaven, by definition, is a place where all is perfect. Therefore, in Heaven everybody is exactly like everybody else, and *therefore*, everybody is thoroughly and completely bored! There is no torture like boredom, Dixon, and— Well, have I proved my point?"

I was floored. "But—about anarchy, then?" I stammered.

"Simple. Very simple for van Manderpootz. See here; with a perfect nation—that is, one whose individuals are all exactly alike, which I have just proved to constitute perfection—with a perfect nation, I repeat, laws and government are utterly superfluous. If everybody reacts to stimuli in the same way, laws are quite useless, obviously. If, for instance, a certain event occurred that might lead to a declaration of war, why, everybody in such a nation would vote for war at the same instant. Therefore government is unnecessary, and therefore anarchy is the ideal government, since it is the proper government for a perfect race." He paused. "I shall now prove that anarchy is *not* the ideal government—"

● "Never mind!" I begged. "Who am I to argue with van Manderpootz? But is *that* the whole purpose of this dizzy robot?—just a basis for logic?" The mechanism replied with its usual rasp as it leaped toward some vagrant car beyond the window.

"Isn't that enough?" growled van Manderpootz. "However,"—his voice dropped—"I have even a greater destiny in mind. My boy, van Manderpootz has solved the riddle of the universe!" He paused impressively. "Well, why don't you say something?

"Uh!" I gasped. "It's—uh—marvelous!"

"Not for van Manderpootz," he said modestly.

"But—what is it?"

"Eh—Oh!" He frowned. "Well, I'll tell you, Dixon. You won't understand, but I'll tell you." He coughed. "As far back as the early twentieth century," he resumed, "Einstein proved that energy is particular. Matter is also particular, and now van Manderpootz adds that space and time are discrete!" He glared at me.

"Energy and matter are particular," I murmured, "and space and time are discreet! How very moral of them!"

"Imbecile!" he blazed. "To pun on the words of van Manderpootz! You know very well that I mean particular and discrete in the physical sense. Matter is composed of *particles*, therefore it is particular. The particles of matter are called electrons, protons, and neutrons, and those of energy, quanta. I now add two others; the particles of space I call spations, those of time, chronons."

"And what in the devil," I asked, "are particles of space and time?"

"Just what I said!" snapped van Manderpootz. "Exactly as the particles of matter are the smallest pieces of matter that can exist, just as there is no such thing as a half of an electron, or for that matter, half a quantum, so the chronon is the smallest possible fragment of time, and the spation the smallest possible bit of space. Neither time nor space are continuous; each is composed of these infinitely tiny fragments."

"Well, how long is a chronon in time? How big is a spation in space?"

"Van Manderpootz has even measured that. A chronon is the length of time it takes one quantum of energy to push one electron from one electronic orbit to the next. There can obviously be no shorter interval of time, since an electron is the smallest unit of matter and the quantum the smallest unit of energy. And a spation is the exact volume of a proton. Since nothing smaller exists, that is obviously the smallest unit of space."

"Well, look here," I argued. "Then what's in between these particles of space and time? If time moves, as you say, in

jerks of one chronon each, what's between the jerks?"

"Ah!" said the great van Manderpootz. "Now we come to the heart of the matter. In between the particles of space and time, inside the particles of matter and energy, must obviously be something that is neither space, time, matter, nor energy. A hundred years ago Shapley anticipated van Manderpootz in a vague way when he announced his cosmoplasma, the great underlying matrix in which time and space and the universe are embedded. Now van Manderpootz announces the ultimate unit, the universal particle, the focus in which matter, energy, time, and space meet, the unit from which electrons, protons, neutrons, quanta, spations, and chronons are all constructed. The riddle of the universe is solved by what I have chosen to name the cosmon." His blue eyes bored into me.

"Magnificent!" I said feebly, knowing that some such word was expected. "But what good is it?"

"What good is it?" he roared. "It provides—or will provide, once I work out a few details—the means of turning energy into time, or space into matter, or time into space, or—" He sputtered into silence. "Fool!" he muttered. "To think that you studied under the tutelage of van Manderpootz. I blush; I actually blush!"

One couldn't have told it if he were blushing. His face was always rubicund enough. "Colossal!" I said hastily. "What a mind!"

That mollified him. "But that's not all," he proceeded. "Van Manderpootz never stops short of perfection. I now announce the unit particle of thought — the psychon!"

This was a little too much. I simply stared.

"Well may you be dumbfounded," said van Manderpootz. "I presume you are aware, by hearsay at least, of the existence of thought. The psychon, unit of thought, is one electron plus one proton, which are bound so as to form one neutron, embedded in one cosmon, occupying a volume of one spation, driven by one quantum for a period of one chronon. Very obvious; very simple."

"Oh, very!" I echoed. "Even I can see that that equals one psychon."

He beamed. "Excellent! Excellent!"

"And what," I asked, "will you do with the psychons?"

"Ah!" he rumbled. "Now we go even *past* the heart of the matter, and return to Isaak here." He jammed a thumb toward the robot. "Here I will create Roger Bacon's mechanical head. In the skull of this clumsy creature will rest such intelligence as not even van Manderpootz—I should say, as *only* van Manderpootz—can conceive. It remains merely to construct my idealizator."

"Your idealizator?"

"Of course. Have I not just proven that thoughts are as real as matter, energy, time, or space? Have I not just demonstrated that one can be transformed, through the cosmon, into any other? My idealizator is the means of transforming psychons to quanta, just as, for instance, a Crookes tube or x-ray tube transforms matter to electrons. I will make your thoughts visible! And not your thoughts as they are in that numb brain of yours, but in *ideal* form. Do you see? The psychons of your mind are the same as those from any other mind, just as all electrons are identical, whether from gold or iron. Yes! Your psychons"—his voice quavered—"are identical with those from the mind of — van Manderpootz!" He paused, shaken.

"Actually?" I gasped.

"Actually. Fewer in number, of course, but identical. Therefore, my idealizator shows your thought released from the impress of your personality. It shows it—ideal!"

Well, I was late to the office again.

● A week later I thought of van Manderpootz. Tips was on tour somewhere, and I didn't dare take anyone else out because I'd tried it once before and she'd heard about it. So, with nothing to do, I finally dropped around to the profes-

sor's quarters, found him missing, and eventually located him in his laboratory at the Physics Building. He was puttering around the table that had once held that damned subjunctivisor of his, but now it supported an indescribable mess of tubes and tangled wires, and as its most striking feature, a circular plane mirror etched with a grating of delicately scratched lines.

"Good evening, Dixon," he rumbled.

I echoed his greeting. "What's that?" I asked.

"My idealizator. A rough model, much too clumsy to fit into Isaak's iron skull. I'm just finishing it to try it out." He turned glittering blue eye on me. "How fortunate that you're here. It will save the world a terrible risk."

"A risk?"

"Yes. It is obvious that too long an exposure to the device will extract too many psychons, and leave the subject's mind in a sort of moronic condition. I was about to accept the risk, but I see now that it would be woefully unfair to the world to endanger the mind of van Manderpootz. But you are at hand, and will do very well."

"Oh, no I won't!"

"Come, come!" he said, frowning. "The danger is negligible. In fact, I doubt whether the device will be able to extract *any* psychons from *your* mind. At any rate, you will be perfectly safe for a period of at least half an hour. I, with a vastly more productive mind, could doubtless stand the strain indefinitely, but my responsibility to the world is too great to chance it until I have tested the machine on someone else. You should be proud of the honor."

"Well, I'm not!" But my protest was feeble, and after all, despite his overbearing mannerisms, I knew van Manderpootz liked me, and I was positive he would not have exposed me to any real danger. In the end I found myself seated before the table facing the etched mirror.

"Put your face against the barrel," said van Manderpootz, indicating a stove-pipe-like tube. "That's merely to cut off extraneous sights, so that you can see only the mirror. Go ahead, I tell you! It's no more than the barrel of a telescope or microscope."

I complied. "Now what?" I asked.

"What do you see?"

"My own face in the mirror."

"Of course. Now I start the reflector rotating." There was a faint whir, and the mirror was spinning smoothly, still with only a slightly blurred image of myself. "Listen, now," continued van Manderpootz. "Here is what you are to do. You will think of a generic noun. 'House,' for instance. If you think of house, you will see, not an individual house, but your ideal house, the house of all your dreams and desires. If you think of horse, you will see what your mind conceives as the perfect horse, such a horse as dream and longing create. Do you understand? Have you chosen a topic?"

"Yes." After all, I was only twenty-eight; the noun I had chosen was—girl.

"Good," said the professor. "I turn on the current."

There was a blue radiance behind the mirror. My own face still stared back at me from the spinning surface, but something was forming behind it, building up, growing. I blinked; when I focused my eyes again, it was—*she* was—there.

● Lord! I can't begin to describe her. I don't know even if I saw her clearly that first time. It was like looking into another world and seeing the embodiment of all longings, dreams, aspirations, and ideals. It was so poignant a sensation that it crossed the borderline into pain. It was —well, exquisite torture or agonized delight. It was at once unbearable and irresistible.

But I gazed. I had to. There was a haunting familiarity about the impossibly beautiful features. I had seen the face — somewhere — sometime. In dreams? No; I realized suddenly what was the source of that familiarity. This was no living woman, but a synthesis. Her nose was the tiny, impudent one of Whimsy

White at her loveliest moment; her lips were the perfect bow of Tips Alva; her silvery eyes and dusky velvet hair were those of Joan Caldwell. But the aggregate, the sum total, the face in the mirror—that was none of these; it was a face impossibly, incredibly, outrageously beautiful.

Only her face and throat were visible, and the features were cool, expressionless, and still as a carving. I wondered suddenly if she could smile, and with the thought, she did. If she had been beautiful before, now her beauty flamed to such a pitch that it was—well, insolent; it was an affront to be so lovely; it was insulting. I felt a wild surge of anger that the image before me should flaunt such beauty, and yet be—*non-existent!* It was deception, cheating, fraud, a promise that could never be fulfilled.

Anger died in the depths of that fascination. I wondered what the rest of her was like, and instantly she moved gracefully back until her full figure was visible. I must be a prude at heart, for she wasn't wearing the usual cuirass-and-shorts of that year, but an iridescent four-paneled costume that all but concealed her dainty knees. But her form was slim and erect as a column of cigarette smoke in still air, and I knew that she could dance like a fragment of mist on water. And with that thought she did move, dropping in a low curtsy, and looking up with the faintest possible flush crimsoning the curve of her throat. Yes, I must be a prude at heart; despite Tips Alva and Whimsy White and the rest, my ideal was modest.

It was unbelievable that the mirror was simply giving back my thoughts. She seemed as real as myself, and—after all—I guess she was. As real as myself, no more, no less, because she was part of my own mind. And at this point I realized that van Manderpootz was shaking me and bellowing, "Your time's up. Come out of it! Your half-hour's up!"

He must have switched off the current. The image faded, and I took my face from the tube, dropping it on my arms.

"O-o-o-o-o-oh!" I groaned.

"How do you feel?" he snapped.

"Feel? All right—physically." I looked up.

Concern flickered in his blue eyes. "What's the cube root of 4913?" he crackled sharply.

I've always been quick at figures. "It's —uh—17," I returned dully. "Why the devil—?"

"You're all right mentally," he announced. "Now—why were you sitting there like a dummy for half an hour? My idealizator must have worked, as is only natural for a van Manderpootz creation, but what were you thinking of?"

"I thought—I thought of 'girl'," I groaned.

He snorted. "Hah! You would, you idiot! 'House' or 'horse' wasn't good enough; you had to pick something with emotional connotations. Well, you can start right in forgetting her, because she doesn't exist."

I couldn't give up hope as easily as that. "But can't you—can't you—?" I didn't even know what I meant to ask.

"Van Manderpootz," he announced, "is a mathematician, not a magician. Do you expect me to materialize an ideal for you?" When I had no reply but a groan, he continued. "Now I think it safe enough to try the device myself. I shall take—let's see—the thought 'man.' I shall see what the superman looks like, since the ideal of van Manderpootz can be nothing less than superman." He seated himself. "Turn that switch," he said. "Now!"

I did. The tubes glowed into slow blue life. I watched dully, disinterestedly; nothing held any attraction for me after that image of the ideal.

"Huh!" said van Manderpootz suddenly. "Turn it on, I say! I see nothing but my own reflection."

I stared, then burst into a hollow laugh. The mirror was spinning; the banks of tubes were glowing; the device was operating.

Van Manderpootz raised his face, a little redder than usual. I laughed half hysterically. "After all," he said huffily, "one might have a lower ideal of man

than van Manderpootz. I see nothing nearly so humorous as your situation."

The laughter died. I went miserably home, spent half the remainder of the night in morose contemplation, smoked nearly two packs of cigarettes, and didn't get to the office at all the next day.

● Tips Alva got back to town for a week-end broadcast, but I didn't even bother to see her, just phoned her and told her I was sick. I guess my face lent credibility to the story, for she was duly sympathetic, and her face in the phone screen was quite anxious. Even at that, I couldn't keep my eyes away from her lips because, except for a bit too lustrous make-up, they were the lips of the ideal. But they weren't enough; they just weren't enough.

Old N. J. began to worry again. I couldn't sleep late of mornings any more, and after missing that one day, I kept getting down earlier and earlier until one morning I was only ten minutes late. He called me in at once.

"Look here, Dixon," he said. "Have you been to a doctor recently?"

"I'm not sick," I said listlessly.

"Then for Heaven's sake, marry the girl! I don't care what chorus she kicks in, marry her and act like a human being again."

"I—can't."

"Oh. She's already married, eh?"

Well, I couldn't tell him she didn't exist. I couldn't say I was in love with a vision, a dream, an ideal. He thought I was a little crazy anyway, so I just muttered "Yeah," and didn't argue when he said gruffly: "Then you'll get over it. Take a vacation. Take *two* vacations. You might as well for all the good you are around here."

I didn't leave New York; I lacked the energy. I just mooned around the city for a while, avoiding my friends, and dreaming of the impossible beauty of the face in the mirror. And by and by the longing to see that vision of perfection once more began to become overpowering. I don't suppose anyone except me can understand the lure of that memory; the face, you see, had been my ideal, my concept of perfection. One sees beautiful women here and there in the world; one falls in love, but always, no matter how great their beauty nor how deep one's love, they fall short in some degree of the secret vision of the ideal. But not the mirrored face; she *was* my ideal, and therefore, whatever imperfections she might have had in the minds of others, in my eyes she had none. None, that is, save the terrible one of being only an ideal, and therefore unattainable — but that is a fault inherent in all perfection.

It was a matter of days before I yielded. Common sense told me it was futile, even foolhardy, to gaze again on the vision of perfect desirability. I fought against the hunger, but I fought hopelessly, and was not at all surprised to find myself one evening rapping on van Manderpootz's door in the University Club. He wasn't there; I'd been hoping he wouldn't be, since it gave me an excuse to seek him in his laboratory in the Physics Building, to which I would have dragged him anyway.

There I found him, writing some sort of notations on the table that held the idealizator. "Hello, Dixon," he said. "Did it ever occur to you that the ideal university cannot exist? Naturally not, since it must be composed of perfect students and perfect educators, in which case the former could have nothing to learn and the latter, therefore, nothing to teach."

What interest had I in the perfect university and its inability to exist? My whole being was desolate over the non-existence of another ideal. "Professor," I said tensely, "may I use that—that thing of yours again? I want to—uh—see something."

My voice must have disclosed the situation, for van Manderpootz looked up sharply. "So!" he snapped. "Do you disregard my advice? Forget her, I said. Forget her because she doesn't exist."

"But—I can't! Once more, Professor —only once more!"

● He shrugged, but his blue, metallic eyes were a little softer than usual. After all, for some inconceivable reason, he liked me. "Well, Dixon," he said, "you're of age and supposed to be of mature intelligence. I tell you that this is a very stupid request, and van Manderpootz always knows what he's talking about. If you want to stupefy yourself with the opium of impossible dreams, go ahead. This is the last chance you'll have, for tomorrow the idealizator of van Manderpootz goes into the Bacon head of Isaak there. I shall shift the oscillators so that the psychons, instead of becoming light quanta, emerge as an electron flow—a current which will actuate Isaak's vocal apparatus and come out as speech." He paused musingly. "Van Manderpootz will hear the voice of the ideal. Of course Isaak can return only what psychons he receives from the brain of the operator, but just as the images in the mirror, the thoughts will have lost their human impress, and the words will be those of an ideal." He perceived that I wasn't listening, I suppose. "Go ahead, imbecile!" he grunted.

I did. The glory that I hungered after flamed slowly into being, incredible in loveliness, and somehow, unbelievably, even more beautiful than on that other occasion. I know why now; long afterwards, van Manderpootz explained that the very fact that I had seen an ideal once before had altered my ideal, raised it to a higher level. With that face among my memories, my concept of perfection was different than it had been.

So I gazed and hungered. Readily and instantly the being in the mirror responded to my thoughts with smile and movement. When I thought of love, her eyes blazed with such tenderness that it seemed as if I—I, Dixon Wells—were part of those pairs who had made the great romances of the world, Heloise and Abelard, Tristram and Isolde, Aucassin and Nicolette. It was like the thrust of a dagger to feel van Manderpootz shaking me, to hear his gruff voice calling, "Out of it! Out of it! Time's up."

I groaned and dropped my face on my hands. The Professor had been right, of course; this insane repetition had only intensified an unfulfillable longing, and had made a bad mess ten times as bad. Then I heard him muttering behind me. "Strange!" he murmured. "In fact, fantastic. Oedipus—Oedipus of the magazine covers and billboards."

I looked dully around. He was standing behind me, squinting, apparently, into the spinning mirror beyond the end of the black tube. "Huh?" I grunted wearily.

"That face," he said. "Very queer. You must have seen her features on a hundred magazines, on a thousand billboards, on countless 'vision broadcasts. The oedipus complex in a curious form."

"Eh? Could *you* see her?"

"Of course!" he grunted. "Didn't I say a dozen times that the psychons are transmuted to perfectly ordinary quanta of visible light? If you could see her, why not I?"

"But—what about billboards and all?"

"That face," said the professor slowly. "It's somewhat idealized, of course, and certain details are wrong. Her eyes aren't that pallid silver-blue you imagined; they're green — sea-green, emerald colored."

"What the devil," I asked hoarsely, "are you talking about?"

"About the face in the mirror. It happens to be, Dixon, a close approximation of the features of de Lisle d'Agrion, the Dragon Fly!"

"You mean—she's real? She exists? She lives? She—"

"Wait a moment, Dixon. She's real enough, but in accordance with your habit, you're a little late. About twenty-five years too late, I should say. She must now be somewhere in the fifties—let's see—fifty-three, I think. But during your very early childhood, you must have seen her face pictured everywhere, de Lisle d'Agrion, the Dragon Fly."

I could only gulp. That blow was devastating.

"You see," continued van Manderpootz, "one's ideals are implanted very early.

That's why you continually fall in love with girls who possess one or another feature that reminds you of her, her hair, her nose, her mouth, her eyes. Very simple, but rather curious."

"Curious!" I blazed. "Curious, you say! Every time I look into one of your damned contraptions I find myself in love with a myth! A girl who's dead, or married, or unreal, or turned into an old woman! Curious, eh? Yeah, damned funny, isn't it?"

"Just a moment," said the professor placidly. "It happens, Dixon, that she has a daughter. What's more, Denise resembles her mother. And what's still more, she's arriving in New York next week to study American letters at the University here. She writes, you see."

That was too much for immediate comprehension. "How—how do *you* know?" I gasped.

It was one of the few times I have seen the colossal blandness of van Manderpootz ruffled. He reddened a trifle, and said slowly, "It also happens, Dixon, that many years ago in Amsterdam, Haskel van Manderpootz and de Lisle d'Agrion were—very friendly—more than friendly, I might say, but for the fact that two such powerful personalities as the Dragon Fly and van Manderpootz were always at odds." He frowned. "I was almost her second husband. She's had seven, I believe; Denise is the daughter of her third."

"Why—why is she coming here?"

"Because," he said with dignity, "van Manderpootz is here. I am still a friend of de Lisle's." He turned and bent over the complex device on the table. "Hand me that wrench," he ordered. "Tonight I dismantle this, and tomorrow start reconstructing it for Isaak's head."

● But when, the following week, I rushed eagerly back to van Manderpootz's laboratory, the idealizator was still in place. The professor greeted me with a humorous twist to what was visible of his bearded mouth. "Yes, it's still here," he said, gesturing at the device. "I've decided to build an entirely new one for Isaak, and besides, this one has afforded me considerable amusement. Furthermore, in the words of Oscar Wilde, who am I to tamper with a work of genius? After all, the mechanism is the product of the great van Manderpootz."

He was deliberately tantalizing me. He knew that I hadn't come to hear him discourse on Isaak, or even on the incomparable van Manderpootz. Then he smiled and softened, and turned to the little inner office adjacent, the room where Isaak stood in metal austerity. "Denise!" he called, "Come here,"

I don't know exactly what I expected, but I do know that the breath left me as the girl entered. She wasn't exactly my image of the ideal, of course; she was perhaps the merest trifle slimmer, and her eyes—well, they must have been much like those of de Lisle d'Agrion, for they were the clearest emerald I've ever seen. They were impudently direct eyes, and I could imagine why van Manderpootz and the Dragon Fly might have been forever quarreling; that was easy to imagine, looking into the eyes of the Dragon Fly's daughter.

Nor was Denise, apparently, quite as femininely modest as my image of perfection. She wore the extremely unconcealing costume of the day, which covered, I suppose, about as much of her as one of the one-piece swimming suits of the middle years of the twentieth century. She gave an impression, not so much of fleeting grace as of litheness and supple strength, an air of independence, frankness, and—I say it again—impudence.

"Well!" she said coolly as van Manderpootz presented me. "So *you're* the scion of the N. J. Wells Corporation. Every now and then your escapades enliven the Paris Sunday supplements. Wasn't it you who snared a million dollars in the market so you could ask Whimsy White—?"

I flushed. "That was greatly exaggerated," I said hastily, "and anyway I lost it back before we—uh—before I—"

"Not before you made somewhat of a fool of yourself, I believe," she finished sweetly.

Well, that's the sort she was. If she hadn't been so infernally lovely, if she hadn't *looked* so much like the face in the mirror, I'd have flared up, said "Pleased to have met you," and never have seen her again. But I couldn't get angry, not when she had the dusky hair, the perfect lips, the saucy nose of the being who to me was ideal.

So I did see her again, and several times again. In fact, I suppose I occupied most of her time between the few literary courses she was taking, and little by little I began to see that in other respects besides the physical she was not so far from my ideal. Beneath her impudence was honesty, and frankness, and, despite herself, sweetness, so that even allowing for the head-start I'd had, I fell in love pretty hastily. And what's more, I knew she was beginning to reciprocate.

That was the situation when I called for her one noon and took her over to van Manderpootz's laboratory. We were to lunch with him at the University Club, but we found him occupied in directing some experiment in the big laboratory beyond his personal one, untangling some sort of mess that his staff had blundered into. So Denise and I wandered back into the smaller room, perfectly content to be alone together. I simply couldn't feel hungry in her presence; just talking to her was enough of a substitute for food.

"I'm going to be a good writer," she was saying musingly. "Some day, Dick, I'm going to be famous."

Well, everyone knows how correct that prediction was. I agreed with her instantly.

She smiled. "You're nice, Dick," she said. "Very nice."

"Very?"

"Very!" she said emphatically. Then her green eyes strayed over to the table that held the idealizator. "What crackbrained contraption of Uncle Haskel's is that?" she asked.

I explained, rather inaccurately, I'm afraid, but no ordinary engineer can follow the ramifications of a van Manderpootz conception. Nevertheless, Denise caught the gist of it and her eyes glowed emerald fire.

"It's fascinating!" she exclaimed. She rose and moved over to the table. "I'm going to try it."

"Not without the professor, you won't! It might be dangerous."

That was the wrong thing to say. The green eyes glowed brighter as she cast me a whimsical glance. "But I am," she said. "Dick, I'm going to—see my ideal man!" She laughed softly.

● I was panicky. Suppose her ideal turned out tall and dark and powerful, instead of short and sandy-haired and a bit—well, chubby, as I am. "No!" I said vehemently. "I won't let you!"

She laughed again. I suppose she read my consternation, for she said softly, "Don't be silly, Dick." She sat down, placed her face against the opening of the barrel, and commanded, "Turn it on."

I couldn't refuse her. I set the mirror whirling, then switched on the bank of tubes. Then immediately I stepped behind her, squinting into what was visible of the flashing mirror, where a face was forming, slowly—vaguely.

I thrilled. Surely the hair of the image was sandy. I even fancied now that I could trace a resemblance to my own features. Perhaps Denise sensed something similar, for she suddenly withdrew her eyes from the tube and looked up with a faintly embarrassed flush, a thing most unusual for her.

"Ideals are dull!" she said. "I want a real thrill. Do you know what I'm going to see? I'm going to visualize ideal horror. That's what I'll do. I'm going to see absolute horror!"

"Oh, no you're not!" I gasped. "That's a terribly dangerous idea." Off in the other room I heard the voice of van Manderpootz, "Dixon!"

"Dangerous — bosh!" Denise retorted. "I'm a writer, Dick. All this means to

me is material. It's just experience, and I want it."

Van Manderpootz again. "Dixon! Dixon! Come here." I said, "Listen, Denise. I'll be right back. Don't try anything until I'm here—please!"

I dashed into the big laboratory. Van Manderpootz was facing a cowed group of assistants, quite apparently in extreme awe of the great man.

"Hah, Dixon!" he rasped. "Tell these fools what an Emmerich valve is, and why it won't operate in a free electronic stream. Let 'em see that even an ordinary engineer knows that much."

Well, an ordinary engineer doesn't, but it happened that I did. Not that I'm particularly exceptional as an engineer, but I *did* happen to know that because a year or two before I'd done some work on the big tidal turbines up in Maine, where they have to use Emmerich valves to guard against electrical leakage from the tremendous potentials in their condensers. So I started explaining, and van Manderpootz kept interpolating sarcasms about his staff, and when I finally finished, I suppose I'd been in there about half an hour. And then — *then* I remembered Denise!

I left van Manderpootz staring as I rushed back, and sure enough, there was the girl with her face pressed against the barrel, and her hands gripping the table edge. Her features were hidden, of course, but there was something about her strained position, her white knuckles—

"Denise!" I yelled. "Are you all right? *Denise!*"

She didn't move. I stuck my face in between the mirror and the end of the barrel and peered up the tube at her visage, and what I saw left me all but stunned. Have you ever seen stark, mad, infinite terror on a human face? That was what I saw in Denise's—inexpressible, unbearable horror, worse than the fear of death could ever be. Her green eyes were widened so that the whites showed around them; her perfect lips were contorted, her whole face strained into a mask of sheer terror.

I rushed for the switch, but in passing I caught a single glimpse of—of what showed in the mirror. Incredible! Obscene, terror-laden, horrifying things—there just aren't words for them. There *are* no words.

Denise didn't move as the tubes darkened. I raised her face from the barrel, and when she glimpsed me she did move. She flung herself out of that chair and away, facing me with such mad terror that I halted.

"Denise!" I cried. "It's just Dick. Look, Denise!"

But as I moved toward her, she uttered a choking scream, her eyes dulled, her knees gave, and she fainted. Whatever she had seen, it must have been appalling to the uttermost, for Denise was not the sort to faint.

● It was a week later that I sat facing van Manderpootz in his little inner office. The grey metal figure of Isaak was missing, and the table that had held the idealizator was empty.

"Yes," said van Manderpootz. "I've dismantled it. One of van Manderpootz's few mistakes was to leave it around where a pair of incompetents like you and Denise could get to it. It seems that I continually overestimate the intelligence of others; I suppose I tend to judge them by the brain of van Manderpootz."

I said nothing. I was thoroughly disheartened and depressed, and whatever the professor said about my lack of intelligence, I felt it justified.

"Hereafter," resumed van Manderpootz, "I shall credit nobody except myself with intelligence, and will doubtless be much more nearly correct." He waved a hand at Isaak's vacant corner. "Not even the Bacon head," he continued. "I've abandoned that project, because, when you come right down to it, what need has the world of a mechanical brain when it already has that of van Manderpootz?"

"Professor," I burst out suddenly, "why won't they let me see Denise? I've been at the hospital every day, and they let me into her room just once—just once,

and that time she went right into a fit of hysterics. Why? Is she—?" I gulped.

"She's recovering nicely, Dixon."

"Then why can't I see her?"

"Well," said van Manderpootz placidly, "it's like this. You see, when you rushed into the laboratory there, you made the mistake of pushing your face in front of the barrel. She saw your features right in the midst of all those horrors she had called up. Do you see? From then on your face was associated in her mind with the whole hell's brew in the mirror. She can't even look at you without seeing all of it again."

"Good—God!" I gasped. "But she'll get over it, won't she? She'll forget that part of it?"

"The young psychiatrist who attends her—a bright chap, by the way, with a number of my own ideas—believes she'll be quite over it in a couple of months. But personally, Dixon, I don't think she'll ever welcome the sight of your face, though I myself have seen uglier visages somewhere or other."

I ignored that. "Lord!" I groaned. "What a mess!" I rose to depart, and then—then I knew what inspiration means!

"Listen!" I said, spinning back. "Listen, professor! Why can't you get her back here and let her visualize the ideally beautiful? And then I'll—I'll stick my face into that!" Enthusiasm grew. "It *can't* fail!" I cried. "At the worst, it'll cancel that other memory. It's marvelous!"

"But as usual," said van Manderpootz, "a little late."

"Late? Why? You can put up your idealizator again. You'd do that much, wouldn't you?"

"Van Manderpootz," he observed, "is the very soul of generosity. I'd do it gladly, but it's still a little late, Dixon. You see, she married the bright young psychiatrist this noon."

Well, I've a date with Tips Alva tonight, and I'm going to be late for it, just as late as I please. And then I'm going to do nothing but stare at her lips all evening.

THE END

NO PEOPLE ON MARS?

In a meeting of the International Astronomical Union in Paris reported on July twelfth, according to an Associated Press dispatch, it was stated that there cannot be any human beings living on the planet Mars, due to the fact that the atmosphere there does not contain enough oxygen.

The members of the Commission on Planets, Comets, and Satellites, in session, claimed that the oxygen on Mars must be less than one per cent of that of the earth's atmosphere. This means, they say, that Mars' atmosphere prevents the existence of "life as we know it" on that planet. However, they admitted that there might be certain types of vegetation and even perhaps some sort of animal life there.

Though the moon may look very romantic to young lovers, these illusions were easily squelched by the same committee, when they stated that the temperature there falls over three hundred and ninety-six degrees, Fahrenheit, in one hour, during an eclipse of the sun—from 120 above zero centigrade to 100 below. The members of the committee believe, like most scientists, that the surface of the moon consists of volcanic ashes and pumice—not green cheese.

E. M. Antoniadi of the Meudon, France, observatory states that there are clouds on Mercury. However, they are not the kind of clouds we are familiar with—for there is no moisture on the planet—but dust clouds. For this reason, he believes that there can be no life on Mercury.

(Illustration by Saaty)

As they raced through the air, the wind bore to his sharp ears the sound of Di Marco's cackling laughter.

ONE HUNDRED GENERATIONS

By PHILIP JACQUES BARTEL

● We give you here the third story by this new author that it has been our pleasure to accept. It is written in the same delightful style as his previous work, and if you have read his "Twenty-Five Centuries Late" and "The Elixir of Progress," we know that you are contemplating a rare treat and we guarantee that you will not be in the least bit disappointed.

Like in his other stories, we find here a real O. Henry ending—not just a plain surprise. It is the clever twist on the last page (and we beg you not to spoil the story by looking at it first) that makes the present yarn what our rural friends would call a "humdinger."

We find here the story of the most colossal experiment in history—one that takes "One Hundred Generations," and the findings will more than amaze you.

● At the shrill hum of the visicast receiver, Smith-Jay nervously came out of his deep revery and glided to the control panel.

He closed a switch and spoke into a visiphone: "Science-Research Section L-42; Smith-Jay, director, present!"

The platinoid screen clouded and cleared. At the venerable face that appeared before his startled eyes, Smith-Jay inwardly quailed.

"Burke-Sol, Discipline Bureau, City of Neonia. I am directed to order you to depart at once to the capitol at Xenonia for a conference with the Executive Section of the Supreme Council. No delay will be tolerated." Burke-Sol's cynical expression seemed more pronounced than usual as he concluded his message.

"At last it has come," murmured Jay in despair, "but so soon! Surely I understood that I was to have still another month!"

Civilization's greatest minds had unanimously agreed, at the latest session of the Supreme Council, that humanity had reached its highest point of development five hundred years before. True enough, the Science-Research Smiths, proudest of the world's family groups, were reporting new ingenious discoveries almost daily. But insofar as the main issues of the Physical Improvement and Development of Man were concerned, no progress had been made for centuries.

After thousand-year cycles of Democratic, Socialistic, and Fascistic governments, the people of the Earth broke up into groups or guilds of skilled workers, who, ignoring ancient national boundaries, grew to learn that all Progress depended on co-operation.

At first these guilds drew off by themselves and pursued their own art or profession, which greatly developed and improved under this system of uninterrupted study. Male and female students and workers of each group married only among themselves, thereby forming huge families who controlled separate industries and professions.

Recognizing the need for inter-family understanding, the family groups met and formed a Paternalistic System of government, consisting of the Patriarchs who were the heads of the individual families.

Further divisions were made to establish Eugenic, Nutrition, Transportation, Science-Research, Construction, and Communication Councils. As the years passed, these too, were subjected, each by a different Family-Group, until in this Fifty-Fifth Century of light, the bare mention of an individual's surname immediately told his profession.

With the disappearance of political boundaries, the moral and mental make-up of the people radically changed. Greed, envy, vice, and corruption together with selfishness rapidly waned, as concern for the benefit of the individual gave place to an interest only for the good of the community or Family-Group.

Members of each Family were directly responsible to the ruling Patriarch, who in turn answered to the Supreme Council of which he was a member, and whose decision was final.

Thus, freed from thoughts of war and material profit, civilization advanced with great strides. Invention and discoveries of vital importance to the welfare of all quickly dispensed with the need for hard labor. Intricate machines automatically supplied food, clothing, and shelter, and every want was almost anticipated.

Though the Historian-Council, through the mouth of their Patriarch, the popular Governor Green-Fred, called the opening of the year 5400 the Golden Age, his fellow-members of the Supreme Council did not agree with him.

"Man," stated the aged Smith-Ray, present Governor of the Supreme Council, "has gained mentally and morally, but not physically. We must concern ourselves with the problem of restoring his once powerful frame. What matter it if he gain marvelous mental powers, if the use of his legs, now shrivelled to uselessness by neglect, is gone forever? Suppose that by an earthquake or tidal wave our complicated system of energy-generation is destroyed? How will man move about in his attempt to restore it?

"To this effect, I order a Special Section of the Science-Research Council to be created, bearing the number 'L-42' and appoint Smith-Jay to be its director. You will interest yourself only in the problem or restoring Man's powerful physique or discovering a suitable substitute. Exactly one's years time is given you. Waste not one moment of it!"

These words rang in Smith-Jay's ears as he donned his weather-hood and guided his carriage to the first level.

Sadly he reflected: "The venerable Smith-Ray is right. Even *I* dare not tempt the dangers of the outer air without my weather-hood for fear that pneumonia or worse might set in and death follow. Truly, Humanity is in the last stages of debility!"

One year he had received in which to arrive at a solution to this Universal Problem, but at the present time, just eleven months had passed without a single result. And now came the Supreme Council's summons!

Had they spied on his labors? Had a member of the treacherous Discipline-Council, the Burke-Family, in disguise, slipped into his Section and read the almost blank pages of the daily record-book?

He was sure that this was not the case. The Supreme Council did not stoop to spy on their trusted workers.

"Well," he sighed hopelessly, "perhaps I have been summoned to hear some suggestion. But why worry needlessly? I'll find out soon enough!"

● His rubber-tired carriage silently sped over the smooth pavement and soon he was at the base of the metal tower in which he and his young bride made their home.

He glanced at the visitor's panel and saw that it was illuminated. Evidently, Smith-Elsa was at home. A smile came over his bland face as he thought of his wife. How clever she was! In her own Council, she was slated for the next directorship.

The Eugenics-Council, in their infinite wisdom, had made a wise selection when they chose Elsa for his mate. Although perfect strangers until the day of their wedding, a strong feeling of affection had sprung up between them. The word "Love" was not in their category — and rightfully so.

Each had been turned over to the Eugenics-Council, right after birth, and for twenty years had been educated in accordance with the rules of the Scientific-Smiths. During that period, neither had

ever gazed upon an unmarried member of the other's sex.

At the age of twenty they had been eugenically typed. The Local Bureau had carefully examined their physiological records before pairing them for marriage. But even then, the approval of the Smith Patriarch had been necessary. This was a prerogative the Smiths had refused to relinquish. The scientific glory of their venerated Family must not diminish!

Jay pressed the annunciator-button and presented his face to the panel. Soon a buzz was heard and Elsa's round, bald head bobbed permission to enter.

This permission to intrude upon an individual's privacy was necessary even in one's own family, as the Council feared that an abrupt intrusion some day might break up an important train of thought. Most of the Smith-Family's important discoveries had been the result of hours of quiet, peaceful meditation. These were greatly to be encouraged.

"Greetings, Jay," she murmured as he entered. "You appear worried. Has anything gone wrong with your labors?"

"Nothing, Elsa—save that I am summoned to Xenonia for a conference."

"A conference!" she exclaimed, "but surely your time is not up?"

"I have still a month," he nodded.

"Then what can they desire?"

"Perhaps some suggestion as to a new method of procedure."

Elsa composed her features. "Nothing to be concerned about, I am sure. You'd better hurry; the public conveyance for Xenonia leaves in ten minutes. Wait—I'll make certain of the time."

She slid noiselessly to the visicast receiver and adjusted a dial.

"Second Zone Time," droned the speaker, "Eleven minutes before sixteen o'clock. The fifth day of Equality, 5401."

"I'll accompany you to the landing platform," she said. "Just a moment till I put on my weather-hood."

Jay muttered an objection, but she waved him aside, and together they glided, side by side, to where the public conveyance, a huge polytrol, prepared for its journey to the Capital City of Xenonia.

The young scientist slid to a gate where, at an attendant's challenge, he bent his head and exhibited his tattooed identification marks. With a grunt, Jay and Elsa were permitted to pass.

She rolled up the gangplank after him and saw that his carriage was tightly fastened to its holder in the side of the craft, then looked at him anxiously.

"Jay," she inquired, "have you enough food-tablets? You may be away for days."

"Silly child," he chided, "as if the polytrol hasn't food for all!" Secretly he enjoyed her anxiety and interest.

"I'll be at my laboratory until the twenty-fourth hour tonight, if you want me. Let me hear from you," she faltered.

The Transportation-Council's attendant whistled the starting signal and slid down the aisle, closely eyeing the carriage fastenings.

Elsa turned the power-handle of her conveyance and touched Jay's hand in farewell.

"Work steadily," he mumbled after her in the parting expression of the day.

The gangplank was withdrawn and the polytrol began its flight.

Turning on his carriage, Jay followed Elsa with his eyes. A chilling premonition told him that strange events would occur before they would meet in the flesh once more. He was right.

CHAPTER II

Humanity's Need

● Smith-Jay glanced down the long aisles filled with passengers of all arts and industries. Many he knew. Right ahead of him was Reade-Mel, vice-governor of the Nutrition-Council, in whose charge was the responsibility of feeding half the world.

At his right sat Green-Jo, a director of a Historian-Council Section, famous for his satirical version of the day's news. Many times had this news-gatherer

shocked his more conservative listeners with lusty tales of past civilizations and grated their sensitive nerves with his strange bursts of uncontrolled laughter. But none dared complain, as who could tell the name of the next victim that Jo would pick for one of his mortifying comparisons?

Jones-Lem of the Transportation-Council, just across the aisle, leaned over and bobbed a greeting. Absent-mindedly, Jay grunted a reply. His thoughts were on serious things.

His breast swelled with pride as he reviewed the marvelous inventions that his great family, the Science-Smiths, had given to Humanity. Centuries back when the experts had realized that the use of atomic energy was fast using up the planet's resources, it was a Smith who had led the movement for the replacement of atomic power by the invention of still another Smith—Rojonol, the great catalyst whose presence caused the sun's rays to be converted into a fuel for the dynamos of the earth. And wasn't it a Smith who perfected the science of telekinetics that enabled men to send power through the air and even through the earth to millions of receiving mechanisms, large and small?

Even this gigantic polytrol, hurling itself through the stratosphere at a thousand miles per hour in an arc that would bring it down precisely at the Antarctic Capital City of Xenonia, was perfected by a Smith in collaboration with a Transportation-Council-Jones!

But Green-Fred was wrong. This was *not* the Golden Age of Civilization! Man *had* sold his birth-right for a Mess of Pottage!

True enough, he had uncountable scientific marvels at his command, but at what cost!

His once well-shaped head unrecognizably changed. Bulging at the top—from extreme mental concentration—round and bald, it shone like the top of ancient Mount Olympus. Then narrowing down unsymmetrically to a puny jaw, it was shriveled from lack of mastication of teeth long lost in a glorious past of artificial substitutes!

Of course teeth would disappear if food was no longer chewed! Pills and concentrated food-tablets made this inevitable!

And their lower limbs!—once muscular and pleasing to the eye. Look at them now! Flabby, tiny flippers. Useless for support, tender and clumsy, always in the way. Why, someone had started a movement for their amputation at birth! He claimed that they were using up energy that the debilitated human body could hardly afford to lose! Who needed them, anyway? Small, speedy, and comfortable carriages were satisfactory substitutes and took the rider wherever he wanted to go, providing the road was not too bumpy.

Smith-Jay shivered when he recalled his last visit to the local Eugenics-Council Bureau. Infants were being born with shrunken, shriveled stomachs; boneless feet—

With a shudder, he drove the horrible sight from his mind! The Supreme Council was right. Something had to be done soon or early generations would be born with nothing but highly developed skulls, and no physique to speak of!

A slight vibration of the speeding ship informed him that they were nearing their destination. He glanced through the transparent walls of the polytrol and watched it land.

The sun brightly reflected from the golden towers of the Capitol, beautifully set in a field of eternal snow. The ancients had chosen the southern ice-cap of the earth for two reasons. First, its position was nearest to the planet's greatest cities on account of its central location. Secondly, the extreme cold furnished an additional handicap for a possible enemy. Of the two, the latter had been almost forgotten in the disappearance of all strife. The former had proven a real convenience.

As they approached, Jay saw an opening appear in one large tower, and with one swift, accurate movement, the polytrol entered.

In a moment it had completely stopped

and the door had closed behind it. Attendants rushed to assist the passengers to alight and Jay found himself rapidly descending in a fast elevator to the Executive Chamber.

At the entrance to the immense room, he was stopped and challenged. Again his tattooed identification passed him through.

He rolled into an anteroom and took his place in a line of arriving delegates. Some he recognized. They bobbed their heads coldly and turned away. Others just stared at him curiously.

They turned into the hall. Jay felt his heart beat faster and faster. Why had he been summoned here? Was he to be punished for negligence? Negligence was treason. Treason against Humanity was punished in one way only — *disintegration!*

CHAPTER III

Aid from the Unknown

● The opening of a session of the Supreme Council always thrilled Smith-Jay. It was not only the fact that here, under one roof, was gathered the greatest minds of the age. The ceremony and seriousness of the procedure, the respect shown to the aged Patriarchs, all excited his emotions. Not the least of his enjoyment was his pride in the fact that this reverent Supreme Council was governed by his own family Patriarch, the venerable Smith-Ray!

Like the shining white keys in a mathematical calculator, the gleaming bald heads took their positions in innumerable tiers, until the entire hall was filled.

The wrinkled Smith-Ray looked up and raised a diamond gavel. Three raps and the hum of conversation died out. In the silence, his sharp voice echoed to the farthest corner of the room.

"By the power in me vested, I, Smith-Ray, Governor of the Supreme Council, declare this meeting regularly called to order. I pray that the All-Powerful Master-Worker grant that our purposes and plans be successful. The roll of Council-Governors will now be called."

The heads of thirty-three Art and Industrial Councils were all present. Smith-Ray continued.

"Is Smith-Jay, director of Science-Research Section L-42 present?"

"I am here, Great Leader!" Jay's voice trembled. Now he was in for it!

Almost kindly, the elderly Governor answered his salutary bob. "My son, your loyalty and zeal is known unto us. Learn why you have been summoned from your labours one month before your report was due. Will Burke-Sid, Director of Discipline-Council Section B-12 make his report?"

All eyes turned to the center of the hall, where the small body of Burke-Sid glided forward on its carriage.

"Great Leader," he boomed, "I am ready."

"Then proceed!"

Burke-Sid cleared his throat and began. "As all the respected Governors and delegates undoubtedly know, I am the Discipline-Council director in immediate charge of the supervision and policing of all the territory bounded by the Equator, on the south, the fifth degree parallel of latitude on the north, and from the seventieth to the eightieth parallels of longitude, east to west.

"When I took command of Post 'R' of Section B-12, I consulted the electrical log in order that I might become more familiar with the methods of my predecessors. Imagine my astonishment on learning that for a period of two thousand years, strange occurrences had taken place exactly at the end of thirty year intervals!

"The records showed that this post, which is a lonely one situated on the top of a mountain peak, was discovered burnt to ashes exactly every thirty years. The log which is always kept in a fireproof container was the only instrument recovered. No life was ever lost. The conflagration always took place when the director was off on a patrol.

"I determined to arrange to be present at Post 'R' on the next thirtieth anniversary and find out for myself what mys-

terious influence was the cause of destroying our station. I ordered my assistant to make my rounds for me that day and prepared for a long vigil.

"I was not disappointed. The thirteenth hour had scarcely been born when I heard a loud bump on the metal roof of the station. I dashed outside as fast as my carriage would permit, but there was nothing in sight, save a dark form that disappeared in some low-hanging clouds. I knew that it could not have been a flying-craft, as the indicator would long have informed me of an approaching ship.

"Knowing that if I was to learn what had happened I would have to look in another direction, I ascended to the roof of the station and found this sealed tube. Not daring to open it, I visicasted to my superior officer for permission. He ordered me to get a relief and report to Xenonia for further instructions. Here is the tube, Great Leader!"

Smith-Jay, his mind now freed from worry, stared intensely at the metal cylinder in Burke-Sid's hand.

The aged Governor took the tube from Burke-Sid's hand and removed one cap. He turned to Green-Fred, the Historian-Chief, and addressed him.

"Venerable Sir, will you be good enough to again translate this message so that all present will understand it?"

"Willingly, Great Leader." He turned to the assemblage.

"When first this letter was given to me, I could barely decipher it. It is written in the script of the Twenty-Fifth Century, and it was necessary for me to consult ancient records before I could read it. The following is a literal translation.

" 'To The Supreme Council, Family Groups of the Earth: Greeting. I have been informed that one of your representatives is determined to remain at his post until he discovers the cause of the series of fires, which I make bold to advise, were in accordance with the instructons of my respected ancestors and myself.

" 'I dare not wait much longer, as I am the last of my family and death approaches rapidly. Many times have I listened to your Supreme Council Proceedings through my visicast (which was stolen from your destroyed post) and I am entirely familiar with your problem. I too, and my respected ancestors, were concerned with the important problem of the Preservation and Development of Man!

" 'For one hundred generations, my family has labored in the greatest cause in the history of our planet, and now I am ready to give our results to Humanity. We are not equipped for long distance telecasting, so I have taken this means of communicating with you.

" 'However, if you will send one of your trained scientists to our dwelling-place, which I will describe, I will be pleased to display our remarkable results. Let him leave at once, I pray, as my end draws near and there is much to do.

" 'If your representative will direct his vehicle to a place as close as possible to one degree North Latitude and 78 degrees West Longitude, he will be informed through his telecastor just how to reach us. Let him come alone.

" 'Delay not, as time is of the essence!' "

Green-Fred raised his head as he finished. "It is signed: THE LAST DI MARCO!"

An excited hum of voices swept over the auditorium. Angrily Smith-Ray rapped for silence. He turned to Burke-Sid.

"Where is the place he mentions, my son?"

"Great Leader," shouted Sid, "it is the site of the extinct, ancient volcano of Cayambi, in the Andes Mountains!"

"Smith-Jay," he demanded, "can you leave at once?"

"It is an order, Great Leader," responded Jay enthusiastically.

The aged Governor smiled benevolently. "Go as our ambassador, my son, with the assurance of a proper reward for your zeal. You have full power to act for us; every assistance will be given you."

With the applause of his colleagues ringing in his ears, Smith-Jay left the Executive Chamber. Now for the perils of the unknown!

CHAPTER IV

The Voice from the Air

● At the embarkation chamber, Burke-Sid overtook him.

"Just a moment, Smith-Jay," he barked; "I have some advice for you."

Jay stopped his carriage and listened attentively. Any information of the region would be welcomed. He was in total ignorance of the area.

"The Cayambi Volcano is in my precinct," Sid began. "It is practically unknown to us on account of certain natural conditions. The entire area is mountainous and quite dangerous because of the immense clouds of vapor emitted by countless geysers, making it impossible for flyers to accurately trace a course."

Jay thrilled to the thoughts of more danger. "Have you ever tried to penetrate it?" he asked.

"Many times, but in vain. It is as thick as the heaviest fog that you've ever encountered. Once, I almost collided with a rock peak that was well-nigh invisible 'til I was on top of it. I barely avoided a crash."

"Thanks, Burke-Sid," Jay promised; "I'll use every care."

His geodetron set for 1 degree N. Lat. and 78 degrees W. Long., Jay's speedy monotrol quickly rose in the arc that would unerringly bring it to its destination.

As he flew over the gigantic edifices, which were busily engaged in lightening the burden of Man, Jay's mind was in a whirl. The clicking a l t i t u d e signals warned him that soon he would be too high to observe the storehouses and manufactories of his civilization.

He looked down. The monotrol whizzed over the Nutrition-Council's huge food-tablet plant at Neorania, the Construction-Council's developments and the Discipline-Council's headquarters at Protonia.

Soon he lost sight of the magnificent works of Man as he mounted higher into the stratosphere. The automatic heating apparatus hesitated functioning for a moment and he felt a trace of the space-cold even through his weather-hood, then all was comfortable once more.

Again the glorious outline of the continents came into view. As he neared the coast of South America, the outposts of Man thinned to nothing. Here the jungle was supreme. Ages had had no effect on its inpenetrable fastness. Deep in its swamps and valleys, the descendants of reptile, biped, and quadruped still ruled unchallenged, almost as their antediluvian ancestors had in the morning of the world.

A red light flashed on the control-board before him. He was nearing his destination! A minute later the monotrol came to a complete stop. Jay looked around. He was but a thousand feet over a huge plain of clouds. He glanced at his barometer, and was astounded.

Twenty-five thousand feet above sea level! Burke-Sid was right—this was the dense bank of cloudy vapor he had described—solid as a mass of concrete, in appearance anyway.

He connected the shortest wave of his telecastor and signalled his presence for any who should be listening.

A loud voice in his ear almost made him jump off his seat.

"You are prompt, my son. An old man thanks you. Follow my instructions carefully."

Nervously, Jay muttered his assent.

"Descend 1200 feet into the thickest section of the cloud-bank and release the levitation control of your monotrol."

Dazedly, Jay complied. He was now in almost total darkness.

Again came the pleasant voice. "You are to remain absolutely quiet, no matter what happens, until I bid you move. Fear not; you will be in friendly hands."

Had it not been for the reassuring tone of the stranger's voice, Jay might have objected and demanded reasons. After all, he was not entirely helpless. The slightest pressure of his powerful fingers would send the monotrol sky-rocketing up through the blanket of clouds to the sun-lit sky above, where he would be prepared for anything!

These thoughts were quickly driven from his mind by the rapid succession of several remarkable events.

In the dim light that barely penetrated the dark area around him, Jay saw dark, graceful shadows float to and fro about the car.

He felt light touches on the outer cover, and his heart trembled first with fear, then anger, as he saw a net thrown over the monotrol and sensed that he was being dragged along, somewhere, as if he were a large bird of prey, captured, and lowered to its death.

Any thought of escape quickly departed, as the stranger's voice addressed him. "Carefully, my friend. Remember that you are in safe hands. In several moments you will meet me face to face."

Jay strained his eyes to determine the nature of the things or thing that had him in tow, but their identity escaped him. All he could distinguish were shadows, gracefully guiding his car in the dimness.

Suddenly all went black. Evidently they had entered some kind of cave. Jay was tempted to switch on the monotrol's bright cabin lights, but remembered his orders. He took a deep breath. It was too late now. He was going to see this thing through!

CHAPTER V

Hooded Hunch-backs

● After a series of light bumps, the car came to a stop. Outside everything was still pitch darkness. Just when Jay's tense nerves could stand no more, a blinding light came on. He raised his hands to smarting eyes.

"Now you may open the door and come out," came the friendly voice.

Jay's eyes became accustomed to the brightness and he hastened to look around. He was in no hurry to leave the comparably safe shelter of the monotrol, without a good idea of his new surroundings.

He must play for a little time. "If the venerable stranger will permit," he said, "I will remain here for a moment. My muscles are a bit stiff from my long voyage."

His voice died away as he saw the person who had been addressing him. Before him was a large, high-ceilinged room, evidently used as a study. Through the transparent walls of the monotrol, he saw a couch, quite different from his own in Neonia. It was oblong, not square. Evidently its occupant's body was longer than was customary. His eyes turned to the man who was occupying this strange bed.

A head, oddly covered with gray hairs, sat upon thin shoulders naked to the chest. The unusual sight of hair caused him to almost overlook the smile that hovered on the thin lips, that looked out from the midst of a heavy beard, white with age. Deep blue eyes looked into his own and shed friendliness and hospitality. Other than these parts of the body he could not see, as the stranger was covered with a woolen blanket from the chest down.

Shrugging aside his fears, Jay opened the door of his car and emerged. He adjusted his carriage and slid to the side of the stranger.

Still smiling, he offered his hand to Jay, who regarded him wonderingly. The old man laughed heartily, thin shoulders shaking with mirth.

"I forgot," he grinned, "men do not shake hands these days. Forgive me."

Involuntarily, Jay extended his right hand and grasped the stranger's. He was surprised at its strength.

"Your name is Smith-Jay? I heard the Supreme Council Governor call you that."

Jay nodded.

"You are welcome here. The sole surviving Master of Marconia extends his hospitality. Make yourself comfortable."

"Thanks, venerable sir—" Jay began.

"Call me Di Marco," interrupted the stranger. "My parents neglected to bestow a given name on their sole offspring."

Jay was still slightly dazed. There was so much to be explained.

"Draw nearer, if you please," commanded Di Marco. "I would examine your carriage. Many have I seen in the telecastor, but never before have I been able to handle one."

He threw off the coverlet and Jay's eyes bulged with surprise!

The man had legs! — long, muscular legs with feet and toes fully developed! Only in the visual records of the Historian-Council archives had Jay seen their like! His fears were forgotten. He rushed closer and felt them with expert, trained fingers. Once more he was the cool, curious scientist.

Jay drew back at the roar of laughter that came from Di Marco's lips. His face reddened.

"Excuse me," he apologized, "but my curiosity knew no bounds—"

Di Marco chokingly waved his forgiveness. "You should have seen the look of surprise on your face. It is I who should be forgiven for my lack of courtesy. But I haven't laughed so much in years."

He leaned over and sounded a buzzer. Instantly a door opened and two tall, hooded figures entered. They approached Di Marco, threw a curious glance at Jay, and bowed deeply.

Jay's small jaw dropped in astonishment. More surprises! Then Di Marco was not the only human with the complete use of his legs! He should have known it from the absence of the metal crutch and the hand rail that was part of the equipment of every room at home.

Di Marco's face still bore his amused smile. "Banta," he said to the taller of the men before him, "we have a distinguished visitor; you will show him every kindness and courtesy."

For a moment they turned their backs to Jay, and again his eyes lit up in his surprise. Both men had large disfiguring humps that bulged under the concealing robes they wore!

They bowed to him and the one called Banta spoke. "If the young master will be good enough to follow us, we will show him where he can rest and refresh himself."

Jay was thrilled at the softness and sweetness of Banta's voice. He turned to Di Marco questioningly. "Go with them, my son; my story can wait until you have rested," nodded the old man.

Banta opened a large folding door and motioned to Jay to follow, but as he turned, all present were electrified by a resounding wail that came from the interior of the monotrol. In a moment the room was filled with throngs of hooded, hunch-backed figures who surrounded Di Marco protectingly.

It was Jay's turn to laugh. True, his chuckles were intermingled with qualms at the inrushing figures, but nevertheless his small shoulders shook with merriment.

"What was that?" exclaimed Di Marco, angrily.

"That," grinned Jay, "was our Universal Feeding Signal. I'm surprised that you have never heard it before. But perhaps your telecastor is not always connected."

"Universal Feeding Signal!" Di Marco was deeply moved. "Please explain immediately!"

"A hundred years ago," began Jay, "a member of the Smith-Family, Smith-Jan by name, discovered that if all the people of the world would eat at a given time, the practice of medical science would be greatly aided. He was right. So since then, we take our food-tablets promptly at the beginning of the thirteenth hour each day."

"Very interesting," commented Di Marco; "forgive us if we doubted your integrity. My people were afraid of violence."

Jay bobbed his assent and followed his guides. His eyes were glued on the strange, tall, hooded hunch-backs. They entered a long, well-lighted corridor. He was mentally thankful for its smooth floor, as his carriage needed even surfaces for its best results.

After a short distance had been covered, Jay was shown to a large room with no windows. "Young master," droned

Banta, "you have but to press this button and you will be attended." He bowed and withdrew.

Left alone, Jay wondered how humped backs were to improve the physique of man

CHAPTER VI

Di Marco's Story

● Sleep was out of the question. Jay's mind was whirling. A thousand questions presented themselves. He inspected his quarters and was pleased to find a tap with running water. Eagerly he drank, hoping vaguely that it had been properly treated against disease and infection.

His tired nerves refused to be relaxed, so he continued to investigate his surroundings. The tiled floor and walls were sound-proof, no doubt. Evidently these strangers also realized the value of absolute peace and quiet to their well-being.

He glided to the odd-shaped bed. How different it was from his own couch! This one was oblong and rested on four metal legs. His was square and was suspended from a coiled spring attached to the ceiling, the better to absorb all vibration. Rest was so vital to their easily tired bodies.

He nodded pensively at the straight-backed chairs. They were the first he had ever seen, save in the Historian-Council's Museum. *His* people used soft cushions. They had no long, muscular legs to worry about. He wondered what the immediate vicinity outside the building looked like. At last he could stand it no longer. His trained scientific mind must he satisfied. He had to have more information! He slid to the button that Banta had indicated to him and pressed it.

A light tap on the door and Banta entered. He seemed surprised at the short summons, but politely bowed.

"I am desirous of seeing the Master," stated Jay.

Again Banta bowed. his grotesque hump seeming to grow larger with each bobbing movement. "This way, young master," he indicated.

Once more they passed down the long corridor and halted just outside the large double door to Di Marco's chamber. Banta tapped.

"Enter," rang out Di Marco, jovially.

The scene was as Jay had left it. This time Di Marco was seated in a large arm chair before a table covered with strange dishes.

"Seat yourself next to me," invited his host. "I am about to dine."

Jay's nostrils wrinkled at the unfamiliar odors of cooked food. He slid to the table and stationed himself opposite Di Marco, curiously eyeing the dishes.

"Will you join me? I'm afraid it is simple fare." Di Marco's eyes held laughing lights. He opened his mouth wide.

Jay's interest immediately swung to the strange sight of teeth!

"You have teeth!" he exclaimed in astonishment. "Are they artificial?"

"The few I have left are my own," grinned Di Marco. "We have no false teeth here. Come, let's eat." He lifted a pronged instrument and speared a morsel on his plate.

A feeling of nausea came over Jay as he realized that the man before him was about to partake of reeking flesh! He quickly composed his features, but not before Di Marco had spied his expression of disgust.

"Why don't you take something," he chided, "or the things will cool."

Again Jay suppressed a shudder of repulsion. He reached into his jacket and produced a vial of Food-Tablets. Placing two in his small mouth, he swallowed them in a quick gulp.

"You must excuse me," he told Di Marco, "but unfortunately our people lost their teeth two thousand years ago." He couldn't tell *this* friendly man that meat was considered the food of only the lower animals!

"Why bother to deceive *me?*" laughed Di Marco; "don't forget that I have a pretty good idea of your civilization."

To cover his embarrassment. Jay changed the subject. "If you have no ob-

jections, venerable sir, I should like to discuss a few things."

Di Marco nodded good-naturedly. "Ask on, my friend."

"Where am I, and how did I get here?"

"After you descended into the cloud-bank, you were guided down into the crater of Cayambi volcano, and through a fissure into a cave. My poor house occupies this cave. It is the only entrance to our valley."

"Yes, but please tell me *how* I was conducted here. By whom, I mean!" Jay's voice was vibrant with interest.

Di Marco smiled mysteriously. "Wait until you have heard my story. Then you shall know everything. I have nothing to conceal."

Jay nodded eagerly.

The old man leaned back in his comfortable chair and crossed his thin limbs. "To begin properly, I must take you back just three thousand years." He stopped and took a long breath.

Jay crouched forward on his carriage. His curiosity was about to be satisfied!

Di Marco continued: "In the year 2401, there dwelt in the city of La Scala, in the ancient division of Peru, the six brothers Di Marco, who were known throughout the civilized world for their keen minds and skilled fingers.

"The oldest, Henri Di Marco, had achieved renown as a plastic surgeon. He had virtually performed miracles with his steady hand and sharp knife. But philosophy was his hobby; but of this, more later.

"Francisco Di Marco was the peer of the world's ornithologists. His works on bird life are still consulted, as you doubtlessly know.

"Arturo Di Marco was also a surgeon —a bone-specialist. He had spent years in the clinics of his continent, effecting cures for paralyzed limbs and replacing diseased bone with healthy tissue.

"Alvarado Di Marco's specialty was embryology and pediatrics. His interest was solely in the development of healthy children and his ability was unequalled.

"Benito and Jose Di Marco were twins. They were the youngest in the family. The former was a distinguished chemist and pathologist. The latter was an engineer of note.

"The six brothers dearly loved one another and spent all their spare time in each other's company. The Smith-Family today is known for its pride of achievement. The Di Marcos, in their time, were famous for theirs.

"In his travels, Jose Di Marco had stumbled across an unknown valley peopled by a strange race of white Indians. Entrance to this valley, which was surrounded by impassable mountains, was through the crater of the extinct volcano of Cayambi. While searching for rare metals in the volcano's crater, Jose had discovered this entrance which was unknown even to the valley's inhabitants.

"They were tall, strong, and handsome in appearance, and Jose was delighted. He determined to keep his find a secret until he had brought his brothers to the valley and exhibited his discovery.

"At first they were sceptical and demanded to know why the many aviators who constantly crossed the Andes had never found this so-called secret valley, but when Jose had explained that heavy banks of vapor-clouds from the countless geysers entirely covered it and made close investigation by flyers dangerous, they agreed to accompany him and see the wonders for themselves.

"Secretly they made their departure from the city and before long found themselves in Marconia, as Jose named it. They were entranced by the high type of intelligence and physical development of the natives and decided that they must be the lost race of whites that ancient explorers made mention of."

● The old man stopped his story and rested for a moment. He was plainly tired at his exhaustive recital. Jay nodded understandingly.

After a few minutes of rest, Di Marco resumed his tale.

"About this time, the governments of the earth were confounded by the reports of their Bureaus of Vital Statistics which unanimously agreed in warning them of the increasing epidemics of leg diseases. On account of disuse, due to the over-abundance of vehicles of all descriptions, the muscles and tendons of the leg were shrinking and atrophying.

"Led by Arturo Di Marco, the scientists urged precautionary measures be taken at once, or man would lose the use of his legs before many generations have passed. They were laughed down. In satire and prose, writers sneered at the 'Footless Di Marcos' and jeered at them wherever they were seen.

"This was more than they could stand. Their pride could bear anything but disgrace. In a body they dashed to the home of Henri, the eldest's house. He greeted them warmly. Gathered in his spacious library, he informed them of a plan he had conceived. No longer would they allow themselves to be the target of the world's jokes and disbelief.

"They would retire to Marconia, secretly, with all their scientific equipment and lay the foundation for a new race—a race that would survive, by reason of their superior mental and physical development, long after the myriads of sickly fools had died and disappeared from the face of the earth!"

Once again Di Marco was obliged to stop and rest. Respectfully, Smith-Jay remained quiet. His brain was filled with images of the brave ancestors of the aged man before him. How they must have labored! How they must have struggled in their efforts to educate and train the natives of the lost valley!

But even his keen, sharp mind did not grasp the whole story!

Di Marco thanked Jay with a smile and took up his history.

"Henri, the philosopher, naturally became their leader. He was overjoyed at the opportunity to experiment with some of his daring theories, ideas that the world without would have considered mad and impossible!

"His philosophy was not narrow or selfish. He was not satisfied to remain isolated from the rest of the world, no matter how wonderful his new Utopian surroundings. He had a longing to create a race that, together with the peoples of the future, might result in a Super-Human species of men!

"Henri realized only too well that this huge enterprise would not come to pass in but one generation, so he called his brothers and their families together and confided his ambitions to them.

" 'Many generations from now,' he explained, 'man will evolve into a creature, physically debilitated, and no matter how mentally improved, he will be faced with the gradual disappearance of his muscular powers.

" 'My idea is to study this problem ourselves and to train our children, and they their children, so that, forever, or until the last Di Marco shall have died, work in the great cause shall continue!'

"Henri then asked for suggestions, and Francisco Di Marco, the ornithologist, astounded them all with his offering. He begged his brothers to consider the possibility of evolving a race of men that would be able to fly!"

At these astounding words, Jay almost fell off his carriage! A new train of thought entered his excited mind. Perhaps this would explain many of the things that were bothering him? But Di Marco was still speaking and he dared not miss a word!

"—The brothers knew each other too well to scoff at each other's ideas, strange though they might be. The thought electrified their imaginations — to develop wings on unborn generations! Man would forever be free from his chains that bound him to the ground! *Let* him lose the use of his legs; he would *still* be able to move and contrive food and shelter for his dependents!

"After a moment's reflection, Henri agreed to make the attempt. He had full confidence in his own skill and in that of his brothers. The natives trusted them

and considered them demi-gods. They could do no wrong!

"Hundreds of native children were set aside for the experiment. Francisco decided to use young condors, with which the surrounding country was infested. Later, natives were set at work breeding them for the delicate tests.

"At first Henri made unsuccessful attempts to graft the entire wing and muscle assembly on the skeleton of native infants, but all died. Then Jose suggested that if groups of babies were selected and each section endowed with separate divisions of muscles and feathers, they would stand a better chance for survival and in time, perhaps longer than anticipated, their descendants would be born with all the parts necessary for flight.

"Wearily, they spent years cutting, grafting, joining, sewing and watching. Thousands of young condors were vivisected. It was found beneficial to use two-year old birds for the work, as it was at that age that they began to fly.

"Finally three groups of infants were used. In one group, the meta-carpal or finger bones of each hand were bound, so as to leave only three fingers—the thumb, index, and ring fingers. Primary quills or remiges, as they are called, were then taken from the wings of the young birds and grafted to the skeleton of the upper or posterior surfaces of the hand and interspersed with covert, or small feathers.

"In the second section, another means was used. Secondary quills were removed from the forearm of the bird and attached by their bases to the lower portion of the forearm and wrist of the child. The spaces between were also filled in with small feathers or coverts.

"These first two sections disposed of the Principle of Flight feathers—all the quills, primary, and secondary used in actual flight.

"The third section was more complicated and resulted in the greatest number of deaths of subjects. It consisted of a series of operations in which two sets of muscles were grafted to the child's chest. One was solely concerned with the purpose of depressing the wings, the other to be used for elevating them. Great care was needed here, for in birds, as you know, these muscles are remarkably powerful and must be fully developed to sustain long periods of flight.

"In this last group, one end of the pectoral or breast muscle was removed from the condor and grafted to severed ends of the child's large pectoral muscle. The other end was joined to the infant's humerus or arm, together with the elastic ligament of the bird, thereby connecting the arms closer to the body.

"A second and deeper muscle, called the deltoid, was then attached to that of the child together with the third or smallest muscle, which is named the pectoralis minor. These last two were essential for elevating the wings.

"Progress was slow until Benito the chemist developed a serum made from the blood of the birds. As the temperature of a bird's blood is quite higher than that of man, it blended nicely. This was just what was needed to make the experiment a success.

"Years passed. All the brothers died, but their children, sons and daughters, followed in their footsteps. However, none intermarried with the natives and were therefore born normal. Constant exercise in the forest and climbing mountains preserved for them the use of their legs and they lived to ripe old ages.

"And as for the natives, soon all died but those who were born with the various segments of feathers and the elastic muscles of the condor. Due perhaps to the large quantities of bird-serum, the subjects finally developed the powerful, immovable posterior backbone and hip girdle. Our X-rays have shown us that as in the bird, late generations developed the solid, fused vertebrae, so necessary for speedy flight."

● The old man stopped, completely exhausted. Jay had engraved every word of the long oration on his mind. He felt that it was his turn to express an opinion.

He gathered his bewildered wits and began.

"Venerable sir, I have followed your discourse carefully and can see just how such an experiment is possible. After all, what did your ancestors do? Nothing more than direct the accident of evolution!

"History teaches us that in many cases evolution has been greatly influenced by luck or accident. When the first species of living thing emerged from the ever-present slime that existed in the early years of this planet, it was probably by pure accident, such as a sudden evaporation of the water in the marshy ground, due to the excess heat of the blazing sun, that the smallest blob of living matter, the amoeba, while perfectly at home in the water, found itself drying up and dying in the unprotected heat of dry land.

"Either it had to grow protective cells to enable it to breathe and absorb moisture from the air or perish. In this way, perhaps, other simple living things, blown to and fro by hot winds across rough and uneven surfaces of rock, were forced to develop hardened, friction-resisting under-surfaces, that later evolved into tiny bumps and legs, which enabled them to travel across dry land more easily."

Jay had waxed enthusiastic over this subject that so captivated all his being. Di Marco finally had to stop him.

"Perhaps you wish to know just how far we have gotten? Well, fifty years ago, one of our youngsters first flew. Since then I've had to forbid flying higher than the cloud-blanket for fear that one of your Discipline-Council planes would see them. I'm sorry, but in order to obtain supplies and new machinery, we had to burglarize your outposts, and to avoid suspicion, burned them to the ground.

Again Jay was astounded. "Do you mean to say," he gasped, "that your people can fly? All of them?"

Di Marco nodded. "Every one, even the very old. I had hoods made to entirely cover their bodies, until I had prepared you for the sight of winged humans. Though I can see that they are very uncomfortable, none have complained."

"So *that* is why they appear to be hunch-backs!"

The old man smiled at Jay's exclamation. "Did you think they wore 'weather-hoods' like yours, to protect them from the outer air? Not *my* people! There hasn't been a death from sickness for hundreds of years."

"If it is possible," remarked Jay, "I should like to see them in flight, or at least examine the wings myself. I am very curious as to their construction."

"Immediately!" agreed Di Marco. He reached to the wall and pressed a switch.

In a moment there was a light tap at the door.

"You may enter!" Di Marco shouted with a strange light in his expressive eyes.

The door opened slowly and in strode a figure completely enveloped in the disfiguring hood. Even the person's features were undiscernible. Gracefully, it bowed, first to Di Marco and then to Jay.

A light smile played over Di Marco's bearded lips. "Disrobe!" he ordered. The figure complied.

His small jaw drooping foolishly, Jay gave vent to a deep gasp of perplexing astonishment! His whole body trembled at the astounding sight! Never in his wildest dreams had he imagined so disturbing and bewildering a fantasy! Something entered into his very soul!

CHAPTER VII

Lyth of Marconia

● Never again would Smith-Jay forget the wonderful vision before him! For years to come, his dreams each night would be of this, his first sight of her!

About six feet in height, and perfectly proportioned, stood a young woman. Had he seen her but yesterday, he would have sworn that the girl before his eyes was a legendary goddess!

Coppery hair, cut short so as to form a close sheath for an oval face, itself a

deep brown shade. And eyes! Green as the emerald, with the depthless sparkle of the sea seen from the transparent walls of a monotrol at high noon.

It was minutes before he could tear his eyes from hers. More than her high-arched nose and thin lips he could not see, as she had folded her wings until she seemed clad in a wondrous garment of feathers — feathers that, in the bright light of the room, appeared to be scintillating golden scales.

Dazzled, he dropped his eyes to her feet. They were bare, and though bewildered by her beauty, his dazed mind was just able to note that she had but four toes. He dimly recalled that birds never had more than that number.

Again he raised his glance to her face. As if drawn by an electrical magnet, he could not tear his eyes away! Her lips formed into a smile that lit up her face with an unearthly light.

Di Marco's voice broke the spell and released him.

"Smith-Jay," he drawled, "permit me to present my protegé, Lyth of Marconia. The fleetest wing, the keenest eye, and the sharpest brain are hers. I want you both to be good friends."

Lyth bowed gracefully from the hips. "It is a great honor," she murmured in a musical voice that did things to Jay's taut nerves.

He was only able to mumble some acknowledgment of her greeting.

Di Marco seemed to enjoy Jay's embarrassment and proceeded at once to aggravate it to a startling degree.

"My child," he said to Lyth, "Smith-Jay is the respected visitor we awaited. I have told him our story and he is particularly anxious to examine, himself, the phenomena of human wings. Please be good enough to extend yours so that he can see for himself every detail of their construction and growth."

The girl's smile widened. "Willingly," she answered in her enthralling tones.

If Jay was impressed by her first appearance, he was profoundly moved by the sight of her, as wings extended for flight she posed before him, clad in nothing but a close-fitting leather harness that accentuated every curve of her unusual body.

Di Marco assumed the identity of a schoolmaster who was bringing the details of a strange animal to the attention of rapt students.

"See, Smith-Jay, the formation of the meta-carpals. Birds, you know, never have more than three fingers or four toes." He pointed to the magnificent feathers that covered hands and forearms.

"And note the even growth of the greater, lesser, and median coverts. Give me your hand, my friend."

With these words, he grasped Jay's capable hand and pulled him closer to Lyth.

"Feel for yourself," he pointed, "the place where the large number of vertebrae enter into an immovable connection with her hipbone, forming a powerful girdle which is fused to most of her anterior ribs."

He pulled Jay still closer and pressed the young man's unwilling fingers to her limbs. "Stroke these quills," he ranted, "and see how smoothly they cover the spinal, the ventral, and the femoral tracts."

Mischievously he directed Jay's hands to various parts of her body. "And you may believe me," Di Marco went on, "that nowhere in Marconia will you find more powerful flight muscles, such as these." He indicated strong, hard tissue that entirely covered the breast bone.

Still he continued. "Examine for yourself the fine texture of her feathers. Judge how firm the shaft, how delicate the blade, how closely the barbs or rami grow. And the barbs themselves, see how straight the barbules or radii branch out. Isn't the softness remarkable?"

Jay could stand no more! The close proximity of this glorious creature had set his blood boiling with sensations that he had never felt in his life. His small features were as red as fire, even up to his bulging, shiny skull.

He drew his hand from Di Marco's and moved sharply back on his carriage. At this movement, a pitying expression

came into Lyth's wonderful eyes. He sensed that she was sorry that he had not the use of his legs.

Jay stiffened with shame. He wanted no person's sympathy if first he could not obtain his respect. These conflicting thoughts were interrupted by a surprising change in Di Marco's demeanor.

"That'll be enough for today, my children. Our visitor *must* retire and rest." The old man was insistent. "We have a strenuous day ahead of us, and must consider the welfare of our distinguished guest."

His words were very welcome to Jay's ears. The young man was on the verge of collapse. He muttered an objection, but Di Marco overruled him.

"Surely, it is still early," pleaded Lyth charmingly.

But Di Marco was obstinate. "I order you to retire at once."

The graceful creature bowed to him and flashed Jay a thrilling glance as she floated from the room. A deep sigh came to his lips as she left. In a way he felt greatly relieved.

During the action of the preceding events, Jay had forgotten the presence of Banta who had been in the room all this time. At a signal from Di Marco, he stepped forward.

"Return the young master to his chamber," the old man ordered, "and attend to his every want." Turning to Jay, he smiled benevolently and placed a hand caressingly on his small shoulder.

"A pleasant rest to you, my son," he drawled. "Join us refreshed in the morning. We will have still more wonders to show you."

Again in his room, Jay sought his couch. He could not erase the entrancing vision of Lyth from his mind. Her greenish eyes seemed to be still staring into his own, expressing wondrous promises of more thrills to come.

He was exhausted and fell into a fitful, restless sleep. Gone from his mind were all thoughts of his mate in Neonia, the considerate, clever Smith-Elsa.

Perhaps if she knew of his plight, she might have been able to warn him of the dangers that overshadowed and threatened her fellow-worker, and protect him from the menacing influence of Lyth.

CHAPTER VIII

Valley of Twilight

● Next morning, Jay felt a gentle hand on his shoulder and opened his eyes to see the amiable features of Banta smiling down at him.

No longer did he wear the disfiguring hood. He too appeared to be more graceful in his dark brown sheath of feathers.

Warm brown eyes, full of consideration for his every comfort, shone as he softly whispered to Jay: "Hasten! The Master awaits. He desires your presence immediately."

They found Di Marco at breakfast; with him was Lyth, radiant as ever. Jay experienced new thrills as her eyes met his.

"Good morning, my son," greeted Di Marco. "Forgive us for not waiting, but we hungered."

Only for a moment did Jay allow his glance to rest on the platters of smoking meat. The sight of cooked flesh still was exceedingly repulsive to him. He glided to a position where the food would be out of his vision.

Lyth and the old man smiled at his delicacy.

Finally, Lyth rose from her seat, and at Di Marco's command, assisted him to rise.

"Prepare yourself for your first sight of our valley, Smith-Jay. I doubt whether you have ever seen its equal."

Banta opened a small door and they trooped out onto an open porch.

Jay was not surprised. It was exactly what he expected. The valley opened up before him and widened until it became lost in the distance. Due to the constant heavy cloud-blanket above, the sun's rays did not entirely penetrate, which resulted

in a half-light more resembling the twilight of dawn than that of dusk.

Objects were plainly discernible, but shadows were longer. It made the ordinary phenomenon of daylight seem weird and mysterious.

Di Marco was slightly disappointed at the lack of interest displayed by Jay, and he hastily turned to Lyth.

"Come, my daughter," he grimaced, "let us show our friend your ability in the air."

"Just a moment," Jay broke in. "I've forgotten my weather-hood. The air is cool and I don't care to catch cold."

"Banta!" snapped Di Marco. "The young Master's cloak. Immediately."

The winged man returned in a flash, the transparent weatherhood grotesquely draped over his left wing.

They watched him curiously as Jay put it on. In the dim light it was almost invisible to them.

"Ready, now?" Di Marco asked them. They nodded. Lyth advanced a few feet and with a quick motion of her feet, she sprang into the air rapidly flapping her beautiful wings.

Jay was entranced at the marvelous sight; his eyes followed her every movement.

"What now!" exclaimed Di Marco proudly. "I'll wager this is a sight you've never seen before!"

The young man was too interested to answer.

Di Marco again assumed the role of instructor. "Watch," he indicated, "how the bones of the elbow and wrist make a quarter of a turn during the wings' extension, and its retraction.

"In flight," he continued, "the wings twist upon themselves propeller fashion and reverse themselves so as to have no slip in the air. One of two things is necessary in flying. Either the wings must attack the air with great violence, or the air in rapid motion must attack the wings; either is sufficient.

"If one of us attempts to fly in a calm, the wings must be made to smite the air after the manner of an ancient kite, with great vigor and at a high speed. In this case the wings fly the individual.

"If, however, the person is fairly launched in space and a stiff breeze is blowing, all that is required in many instances is to extend the wings at a slight upward angle to the horizon so that the underparts of the wings present kite-like surfaces."

Di Marco ceased his explanation and yawned, stretching his arms upward in a wide circle. For a minute, Jay took his eyes from the wheeling figure of Lyth and regarded the many low buildings that stood out in the dim light between groves of tall trees.

One minute was enough! Like a stroke of lightning from the skies, Lyth swooped down and, grasping him around the waist, whizzed upward into a breath-taking spurt for the cloud-blanket!

As they raced through the air, the wind bore to his sharp ears the sound of Di Marco's cackling laughter.

Up, up, into the damp vapor and out to where the hot sun blazed upon the rocky, grim Andean peaks they soared. Adjusting his breathing to the thinner air almost choked Jay. He was thankful for his weather-hood; without it he surely must have suffered severe cold.

At last he knew the sensations of a small animal, captured by a monstrous bird of prey, and taken to some lofty aerie for an unknown death. For the first time in his life, Jay knew the feeling of chilling, abject fear!

CHAPTER IX

The Jaws of Death!

● Hardly had Jay recovered from his surprise at being snatched from the earth, when Lyth alighted on the narrow head of a high peak.

He fell back as she released him, helpless without his carriage. Lyth politely ignored his undignified position and turned the power of her green eyes upon him.

Jay could not restrain a sigh of relief at feeling solid ground beneath him once

more. He became slightly angered and avoided the dazzling eyes of the girl as he spoke indignantly.

"Will you be good enough to explain this outrageous conduct?"

Lyth drooped her head, greatly like a mammoth canary. "I did nothing but follow the Master's orders. He desired that you witness an example of our strength and skill in the air." She seemed greatly hurt at his attitude.

"Truly a remarkable way to convince me," said Jay in a kindlier tone. "You almost frightened me to death."

"I am very sorry," she murmured.

Jay twisted around and was surprised to see two white eggs surrounded by a few sticks.

"Can this be a bird's nest?" he asked.

"Yes, Jay," she replied, sweetly, "that of a condor."

He trembled at the tremulous way she pronounced his name.

"But how simple and inadequate," he asserted gruffly to hide his emotion.

"The condor doesn't worry about a complicated nest," she explained, "as it always lays its eggs on the most inaccessible ledge it can find."

"How often?"

Lyth was delighted to find Jay interested in this subject.

"Usually in February and March the bird deposits two eggs that hatch in about seven weeks. After that they must be nursed and fed for two years before they attain their full growth of feathers and learn to fly."

Jay's interest grew. "What does the mother bird feed them during that time?"

"Small animals. Sometimes she will carry a calf to them. They have exceedingly voracious appetites. One that I've tamed ate a calf, a sheep, and a large dog in a single week!"

"You are serious?"

She nodded her shining head emphatically. "Of course, after gorging itself this way, it slept for two days and was very stupid for some time after."

Jay was astounded.

"Would you like to see a young bird?" she inquired. Before he could reply, she was gone from the narrow perch like a rocket in the blue sky. He followed her with anxious eyes until she disappeared.

Uncertainly he peered at the gorgeous scenery around him. In the distance he could see the immense cloud-bank that hid the extensive valley below. High, bleak mountains pushed their grey pinions upward wherever he looked. The glare was unbearable as the hot sun stabbed down at him, and he was forced to squint.

A flutter of wings caused him to reopen them quickly. For a moment he thought that Lyth had returned.

There, high above, wheeled a giant condor. Slowly she circled downward. In spite of the glare, Jay noted every detail of her form. From what he could judge, the bird was from four to five feet from beak to tail.

Her wings he estimated had an expanse of twelve feet. There were no feathers on head or neck, but her body coverts were mostly black intermingled with large patches of white.

He exclaimed at the size of her sharp beak as it wheeled in majestic circles, the very essence of grace. As he watched, it seemed to sail through the sky, hardly moving its wings.

The bird dropped like a plummet and landed on a mountain-top nearby, covered with snow. Jay marveled as it brushed the flakes over its head and wallowed in its cooling softness.

Suddenly the bird changed its tactics. It darted into the air and swooped in ever narrowing circles over Jay's head. Closer and closer it drew, as if to see just what the man-creature that usurped its perch would do to protect itself.

It came to Jay, in a flash, that this bird of prey, this vulture, was a real danger to him. He looked around but could see nothing to defend himself with.

At each of his frantic movements, the bird darted closer, until every time its huge shadow swept over him, Jay winced involuntarily.

There was no place for him to go, even if he had had the use of his legs—no where to crawl. As the sharp beak and ugly claws of the condor missed him time and again, he seriously considered jumping from his narrow perch to the valley below.

That way, death would come suddenly and painlessly. It was much better than being pulled to pieces by those dreadful talons!

From every direction, the condor seemed to dash at him. At once he spotted another shadow over that of the bird. He dared not look up. Was it Lyth returning too late, or was it the condor's mate?

CHAPTER X

The Death of Di Marco

Loud squawks of fury came to Jay's ears as he blindly tried to distinguish what was approaching. Then he saw. The golden form of Lyth was too conspicuous to be mistaken for anything else.

Screaming angrily, the condor made its escape. Lyth lightly dropped to where Jay lay weak with agitation at his narrow deliverance.

Lyth could hardly console herself for her thoughtlessness.

"I never dreamed I was leaving you in danger," she gasped. "What will the Master say?"

"We need not tell him it happened," offered Jay soothingly.

"If he suspects, I'll tell him the truth. It is useless to lie to him." She pointed to a leather belt that formed part of the harness she wore. "Take hold of me here. It will be more comfortable for you."

He complied, and as they soared over the mountain tops, he grew to enjoy the sensation of flying. How different from his monotrol! It seemed more natural and fit than just operating a series of mechanisms.

Down through the cloud-blanket they dropped until the large settlement at the narrow end of the valley was in sight.

They alighted right on the lawn, a few feet from where Di Marco sat watching them intently.

"Well, my son," he queried, "how did you like your first *real* flight? Better than your machines, I'll warrant!"

"It was wonderful, venerable sir. But tell me, how many people live in this valley who are able to fly?"

"Nearly ten thousand. I do not count the aged."

Jay nodded thoughtfully. "Plenty for our purpose. With that number as a beginning, I'm sure that ten generations hence will surely find humanity well on the road to the recovery of its ancient muscles, not to mention the marvelous ability to fly."

Di Marco's eyes were shining with pride. "If only I could live to see it. But I must be content. I am the last of the Di Marcos—the one hundredth generation, to be exact. After I die, and I feel that it must be very soon, our name must not be forgotten. Promise me, Smith-Jay, that you will do all you can to perpetuate it. It is all I ask of you."

"It will be easily done," Jay vowed. "All that is necessary for its perpetuation is for the Supreme Council to direct the group beginning the great work to be designated as the Di Marco Family."

"What immediate steps do you suggest," asked the old man.

"First, I must report to my superior, Smith-Ray, Governor of the Supreme Council. He will advise me."

"But," said Di Marco, "we have no powerful sending telecastor."

"The one in my monotrol will do the trick. With your permission, I'll retire to it immediately."

Di Marco nodded eagerly.

Once more comfortable on his familiar travelling carriage, Jay hastened to the monotrol. Seating himself at its telecastor, he selected the Supreme-Council's private wave.

The small platinoid screen clouded and cleared. A shiny, bald head appeared, its wrinkled face bearing an expression of annoyance. It was Blake-Jim, Governor of the Communications-Council.

"Who dares use the Supreme-Council's private wave?" he demanded.

"Smith-Jay, director of Science-Research Section L-42, on a special mission! I must have the ear of the venerable Smith-Ray at once."

Blake-Jim's bored expression immediately gave way to intense interest. He muttered an apology and faded from the screen.

The austere countenance of Smith-Ray radiated trust and joy.

"My son," he greeted Jay, "long have we awaited word from you. What tidings do you bring? Are you well?"

"Great Leader," rang out Jay's youthful voice, "I have marvelous tidings. Our problem is solved. My mission has been successful. Be pleased to listen—"

As quickly as possible, Jay related his experiences, emphasizing the kindly nature, the powerful frame, and the miraculous flying ability of the natives of Marconia.

The Supreme-Council Governor was intrigued. His amiable face beamed with joy and satisfaction. "I shall convene the Supreme-Council at once for an emergent communication. These are important tidings. You have done well, my son. I shall not forget your service."

"Great Leader," begged Jay, "if you will order a polytrol to be at Post 'R,' Section B-12 of the Discipline-Council, I will have several of the natives prepare to accompany me to Xenonia at dawn tomorrow."

"It is so ordered. Work steadily, my son."

The journey to Xenonia, with but one exception, was the most enjoyable experience of Smith-Jay's life. His companionship with Lyth grew to a warm mutual regard that promised still more possibilities. Her clever mind eagerly grasped his detailed explanation of the miracles of modern science that surrounded them.

Jay became very fond of Banta, who also accompanied them, and whose interest in his comfort became greater each day.

The exception to Jay's total happiness was the illness of Di Marco. The old man had aged and weakened in the excitement of the last day.

As the polytrol left the earth's atmosphere for the few minutes before it resumed its arc of flight, Di Marco gazed at the wonderful view of his planet and expressed his pleasure.

"It is too bad that I must leave you, my children," he sighed; "I would have spent some time toying with man's mechanical marvels, before I died. Now I know how much I missed while in Marconia. Man may have lost his physique, but he certainly has developed his mind."

"Fear not, venerable sir," consoled Jay. "You will live many years. As soon as we arrive, I'll summon our best medical experts. You've seen our mechanical progress; wait until you watch our medical healing rays do their work."

But Di Marco shook his head.

With the speeding hours, the old man grew noticeably weaker. He sent Banta, who never left his side for a moment, for Lyth and Jay.

Sorrowfully they approached his bed. He could hardly move his withered hands. He motioned for them to draw nearer.

"My children," he whispered weakly, "I am dying. I go to join my respected ancestors, the six Di Marcos who so considerately gave not only their only lives, but one hundred generations of their descendants that Humanity might live on for Eternity. Remember my orders. In—in the farewell expression of today, I—I—say—work steadily!" Those were his last words.

Jay turned from Di Marco's death-bed to find that the polytrol was entering the golden towers of the capitol city of Xenonia.

CHAPTER XI

The Revelation

Again Supreme Council was in session.

After a ceremonious opening, Smith-Ray addressed them.

"And now," he announced, "that you have spent a week's time testing the two Marconians, and have heard the Eugenic-

Council's favorable report, I am open to a motion." His wise old eyes singled out Smith-Jay from the multitude.

"Great Leader," boomed Jay, "I move that the Family-Group Governors consider intermarriage with this splendid race, so that future generations of Humanity may regain their ancient splendor together with this remarkable power of flight."

Smith-Ray looked around and White-Len, a director of the Eugenics-Council, seconded Jay's motion.

"Is there any discussion?" The venerable governor knew that there would be a great deal.

"Great Leader," spoke up White-Mark, another Eugenic Councilman. "I favor this union. It is just what humanity needs. Let us vote on the subject that no further time be wasted."

"I, Burke-Phil, director of the Discipline-Council Section A-9, object!" All eyes turned to the speaker.

"It is my opinion," he continued, "that the Marconians are nothing but a superior ornithological or bird group. I should like a greater opportunity to study them. This is an important question and should not be treated lightly. Suppose we were to make a mistake in merging them with us. Can you imagine the horrible results?"

Jay could listen to no more. He controlled his anger and slid from the council-chamber. Knowing that the discussion would go on for hours, he felt that he could stand no more stupidity.

Besides, he wanted to be with Lyth. He had been so busy of late that those precious moments with her had been few and far between.

As he glided down the spacious corridors, the thought came to him that soon they would be separated no longer.

He skilfully turned a corner that would lead him to the quarters of Lyth and Banta. The body of Di Marco was there with them. They had refused to let it out of their sight.

With a quick movement, he checked his carriage's speed, just as he lightly collided with another.

"Excuse my haste," he began, but further speech failed him. Unless he was seeing things, here before him was his mate, Elsa!

She halted him as he was about to depart. "Jay!" Her low voice reached the depths of his soul!

"I want to congratulate you," she faltered, "on the success of your mission. It was wonderful! The whole world is moved by it!"

He couldn't raise his eyes to hers. "Why didn't you telecast me?" she murmured. "I waited night after night."

"You must excuse me, Elsa," growled Jay. "*You* know I am busy."

"Promise you'll come to see me later," she begged. "I have something important to tell you."

Gruffly he nodded and shook off her restraining hand. Gone was his feeling of righteousness. For the first time he felt self-conscious and uncertain. He allowed himself to think of the glorious splendor of Lyth to drive these strange thoughts of Elsa from him.

Thus, mentally occupied, he forgot to tap on Lyth's door, but impatiently threw it open and slid in. His carriage only moved one single foot!

At the horrible sight before him, his senses swam and he clenched his fists in an effort to remain conscious! Could the abominable vision he saw be anything but the accursed scenes from an unholy nightmare? He blinked his eyes to make sure, but the awful tableau persisted!

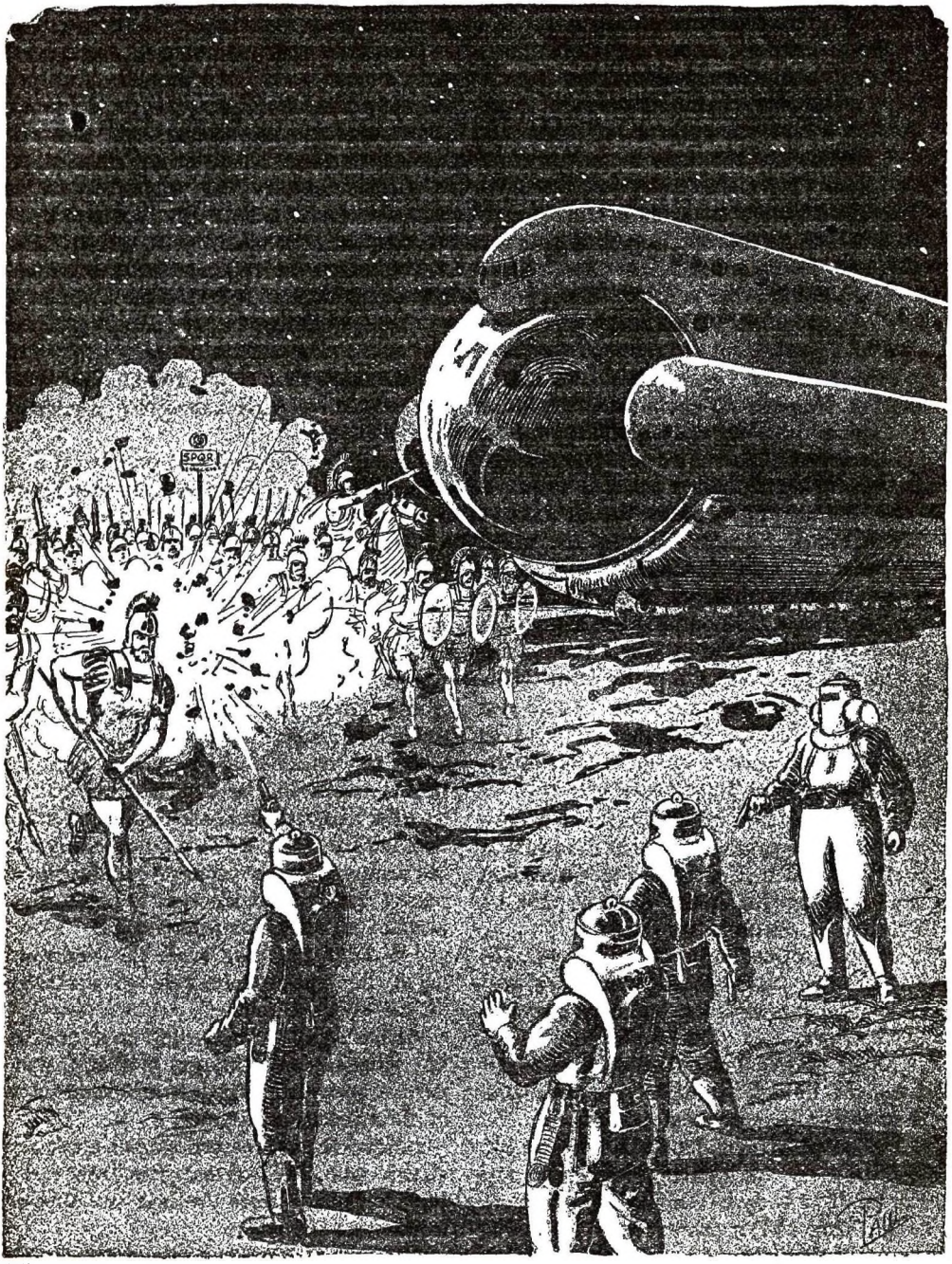
His soul writhing with the depraved sight, he was barely able to mumble: "Lyth—what is this—"

At her reply, new strength came to him. He wheeled his carriage, and at a dangerous speed, returned to the ante-room of the executive chamber.

Before the astonished guard stationed at the door could object, Jay drew a demolitron-pistol from his belt and dashed back to Lyth's room.

He entered the door and, as the occupants came to their feet, he swept them from head to foot with the demolitron's lethal rays, not heeding their awful

(Continued on page 492)



(Illustration by Paul)

Kendall swung up his explosion pistol and pulled the trigger. In the midst of the ranks, there was a terrific flare of light.

THE SPACE LENS

By MILLARD VERNE GORDON

"Shouts of soldiers of nations long past and
Thunder of chariots resound afar.
All things no matter how small or unscanned
Reecho anew from each far off star."
—ROGER DAINTETH

● Over three thousand light years from their native planet, the crew of the *Astralite* finally began to show signs of home-sickness. As Fred Broster put it, "After all, we are earthmen and really never intended for this sort of interstellar wandering."

Doctor Seaward marvelled to himself that they had gone as far as they had before showing those symptoms—and especially after having so many odd adventures, each so different than any that would be encountered on Earth. The worlds of Neb, for example, offered a paramount study in unearthliness. After the charting of those bodies, it was truly a wonder that the men did not commence to look forward to home again as a relief from the constant monotony of the incredibly bizarre and undreamed of sights —and the other things, the Microcosmic Destruction they had witnessed around Spica, or the Illusion of Marilus, or even the great space warp they had encountered only a few hundred light years away from Sol—that great region roughly elliptical in shape, covering a vast area in space where, for some unaccountable reason, the ether had been strangely distorted and twisted so that the *Astralite* was hard put to ride the eka-gravity waves out of it. The doctor had then only found the pitch of this remarkable set of picked men but notched up a little higher. Now, however, they seemed to have reached their peak and reaction was setting in.

● Perhaps you are wondering why we are giving you the works of so many new authors lately. We'll tell you why. In our search for original, refreshingly different science-fiction, we have found a great reservoir of new ideas, themes, and developments in many authors who have never had any science-fiction published before. We are not surprised, therefore, that many of the first efforts we publish are acclaimed on an equal and even better than the stories of the "top-notchers."

After all, even the very best of authors had to have their first stories put into print. After a while, many of the old authors grow stale for ideas and their material becomes cobwebbed and falls into a rut.

So, here is some more new blood. You will find here an entirely original development of one of the most awe-inspiring conceptions of science.

Fred Broster leaned over the space-chart dreamily but half-seeing the moving red dot that was the ship on its course among the stars.

"At this time, it would be spring back in Delaware. The green grass would be growing, a warm breeze brushing through the trees, the birds flying north again, or resting and singing."

"And the apple trees are in bloom and the dandelions and wild flowers first showing their colors," murmured Kendall, resting on his elbows, staring out into the black void.

"And at night, the trilling of the crickets is everywhere, and the soft light of the moon in a deep blue sky shines over the waters of the lake," Arundell, who hailed from Chicago, mused while oiling the inductor coils.

"And out there, all around us, is nothing but blackness, almost vacuum, perhaps a few atoms of calcium scattered

about between the far off suns and occasional planet."

"And wandering comet or piece of cosmic dust," Broster cut in on Kendall's words.

"Oh, what's the use of this sort of talk, fellows," Seaward put in. "We've got to go on schedule."

"I guess so," agreed Arundell. "Still, it gets a fellow, sometimes."

"Earth seven years of the ship's travel away and three thousand of light's." Seaward was playing his part in keeping up the spirits of the crew. "What would the earth say if they knew you failed to carry your explorations to the limit? You volunteered and were picked from thousands of others for your positions here. If you don't go the limit, someone else will."

"And we've got over five years more outward travelling to go before turning back," voiced Broster. "God only knows —Hello, here's another of those d——d hunks of metal coming our way in an hour or so. About planetary size, I should judge."

"So what?" interjected Kendall with a slight yawn. "Just more trouble to be avoided."

"You boys are getting callous. A few years ago, you'd have been excited over that," the ship's physician and air-conditioning regulator remarked.

"What's there to get excited about? This is nothing much. We never land on these things any more after the first ten or so and finding them all alike. Just overgrown meteors."

Kendall, after making this remark, was silent. The rest remained likewise, each quiet in his own thoughts and contemplations.

Then Kendall stared a little harder out through the stella-quartzite window, focussed on something, and then turned around. He wheeled over the remarkable focus apparatus eyepiece of the electro-telescope built in the top of the *Astralite* and adjusted it on something outside. Then he peered through.

"Here's something new. This particular homeless chunk is brightly illuminated. It looks like a regular planet."

Broster and the others moved over to the speaker.

"How can it be lit? There's no star near enough to light it like a planet."

"See for yourself," Kendall commented in answer.

Surely enough, it was so. There out in the blackness of the void shone a tiny disc of light, unmistakably like that of a planet. And it was travelling its meaningless way all alone, unattended by moon or star—wandering through the void, as it probably had done for ages past.

"We'll land on that." Broster ordered, assuming the leadership that was his. "Got to explain the source of that illumination. May perhaps be that the whole thing is heavy with radioactive ore."

"Or a small sun itself," ventured Arundell, attending to the power switch.

"Couldn't be," returned the captain. "Not enough mass."

● Rapidly they drew closer. Travelling as they were with far greater than the speed of light and capable of almost infinite changes in speed and maneuvering, the great craft from the highly scientific world of 2935 neared the wanderer and veered in for a landing.

And the closer they came, the more mystifying and unusual was the world.

For about it, the closer they came, there seemed to be a vague familiarity—something that plucked at the memories stored away in the minds of all who viewed it that caused queer thoughts and spasms of nostalgic yearning to flow through them. There was something about this oncoming mass that was familiar.

They came nearer and nearer. The image in the lens of the viewing instrument became clearer. There crept into Kendall's mind a queer thought, an odd tantalizing thought, that seemed almost too foolish to repeat. Yet finally he blurted it out.

"It looks a devilish lot like the earth."

The men straightened up sharply from

their instruments and looked at each other. Arundell slowly nodded assent, unwillingly, almost as if afraid to admit the resemblance.

"Nonsense," ejaculated Seaward. "You're letting your imaginations run away with you. Probably only a vague resemblance.

But he looked himself and thought that it did indeed look like their home world as seen from the Eastern hemisphere. It had a queer look, despite that. The middle and central portion of the disc was very clear and sharply defined. It resembled the basin of the Mediterranean Sea and its surrounding regions very markedly. But the outer edges of the disc were misty and distorted and blurred as if in poor focus. The doctor tried to focus the scope better, but he could not.

And finally they came so close that none could deny the similarity. It looked like the earth; it was the same size as the earth and it had the same continental markings as the earth.

"It's impossible," murmured one of the men. "Impossible."

"Yet I can make out Italy's boot and Sicily as plain as from the Moon. And the Caspian and Black Seas, and the Straits of Gibraltar and the Spanish Peninsula—they're all there," Arundell whispered in an awed tone.

"But Scandinavia and South Africa and Japan are all too blurred and vague to see—like they were only masses of mist. Only the central portion is visible," Kendall commented.

"We'll land and settle this monkey business once and for all," ordered Broster. "Back to your posts, men. Stand by for landing."

The remarkable ship slowed down tremendously. And yet there was no noticeable effect inside due to the eka-etheric inertia and mass controls. It swung in, steadily neared the surface, and headed for the Italy-shaped peninsula. As they came in within a few miles, they noted that as yet there was no sign of atmosphere. Apparently there was no air on this world. Yet the light streamed down and appeared soft and mellowed as if it were passing through a layer of air.

Down the ship came. Below them the scene spread out—masses of green and brown land, stretches of blue water. Through the 'scope, Kendall made out waves breaking on sandy shores, forests quivering as if in a breeze. As he related what he saw, the men of the crew listened as if in a trance.

"Look! There's a house—another! A whole village! By God, this world is inhabited!" Kendall shouted in astonishment.

"I see figures," he shrieked a moment later. "Black figures running about. There's a whole lot of them coming up a stone road running through the fields around this village. Swarms of them. A regular army."

"Get back," roared Broster as someone made a movement to desert his post and see for himself through the telescope. "You'll see it when we land. Now attend to business before we crash."

The impatience of the men reached a fever heat as the moments went past and the ship lowered itself to the surface. Then it finally came to rest.

There was a concerted rush for the space-lock. But Broster barred the way.

"Stay back, you fools; there's no air on this world!"

"What!" There was an exclamation from them all.

"What! But we saw forests and men and everything. Look out the window now and see for yourself."

"Nevertheless, the indicator shows that there is no air on this planet." Broster pointed to the instrument set in the wall. The men stared at it in puzzled confusion.

"Put on your space-suits and carry full weapons and equipment," the captain ordered, proceeding to get into his own.

● In bewilderment, the men did likewise.

Then, after being fully helmeted and dressed like a group of four deep-sea divers, they stepped into the lock and onto the surface of the stellar wanderer.

Bursts of astonishment broke from their lips. For although they saw distinctly that they were stepping on thick lush grass and soft earth, the feel of it was that of hard, cold metal. And although all about them were signs of life, the waving branches of trees in the background, the flight of insects from flower to flower, the swift movements of birds, the scuttering dust blowing before a breeze along the stone road nearby, yet no sound broke upon their ears, no movement of air was felt by them. If they closed their eyes, they could imagine themselves on the barren surface of the moon. Yet open their eyes, and they found themselves standing on a scene of springtime in Italy. It filled them all with silent wonder. A thousand questions pounded against their brains.

"Here comes somebody," Arundell pointed out.

There were moving figures coming along the road. Then, before their startled eyes, there was a flash of light and a vehicle rolled along rapidly, passed them, and away again into the distance.

"What the blazes?"

"It was a chariot!"

"A Roman chariot! I saw the driver and the man with him plain as day. Regular Roman helmet and uniform. And four horses, sweaty and dusty. And the faces of those men were real. Nothing unearthly about them, either."

The men stared at each other in amazement. All sorts of weird thoughts crowded their minds. They shook their heads in dim bewilderment.

"Here come the rest of them!"

"It's an army. Romans, too."

"A regular legion. See the officers' uniforms, helmets, and breastplates. And the men in the ranks. They are no different from Caesar's men. No difference at all."

Along that road marched file after file of soldiers. Short metal kirtles waved with the motion of their legs; short swords swung at their sides; shining cuirasses and glistening metal helmets were topped with proudly waving plumes on those of the officers. And rows and rows of spears were held defiantly upwards into the light. The space venturers could see the stern grim warrior features of the marchers' faces.

Yet, with all that, not a sound broke the silence. Not a single marcher took note of the space-ship or the curiously garbed figures standing so close by watching them.

"Look at the officer!" Seaward pointed.

An officer in the later ranks was looking over in their general direction. With a wave of his metal-sheathed arm and a motion of his mouth as if shouting a command, he turned for a moment to the soldiers. The lines of men halted and many glances were cast over in the direction of the *Astralite*.

Then, at another inaudible shout, the lines veered and rearranged themselves with the ease of veterans into battle formation. Spears were leveled and shields raised to form a protective wall. And then the entire line left the road and began to move slowly towards the *Astralite*.

The four grew slightly panicky. Although they could defend themselves easily with their highly advanced weapons, there was something so uncanny and ghostly about the line of Romans closing up to them and the ominous proximity of those sharp spear points.

Kendall swung up his explosion pistol and pulled the trigger. In the midst of the ranks, there was a terrific flare of light. Pieces of rock and metal splattered all about. But when the disturbance cleared away, the four gave a shout.

"God help us! What kind of things are these?" gasped Broster. "They're not even hurt!"

"But I saw that explosion in the middle of them with my own eyes!" choked Kendall.

"Say, wait a minute," Seaward exclaimed. "They aren't looking at us at all. They're looking at something behind us!"

Immediately they all whirled about. And their astonishment was complete. For emerging from the woods behind them were coming men—soldiers dressed in conical helmets and different cut equip-

ment—heavily bearded men such as formed the ranks of Carthage of ancient times. They were advancing upon the Romans. Then suddenly the Carthagian line broke and charged forward.

The four space-flyers stood and stared in astonishment. They were caught between two ranks of advancing soldiery. Already long pointed arrows passed by them. Arundell cried out in amazement when he saw an arrow pass straight through Broster's arm and Broster never even murmured.

"Didn't you feel that arrow?" he shouted.

"What arrow?" answered Broster, apparently unaware of what the other had seen.

But before the answer could come, the battle broke. The two ranks of warriors met. They broke into a bloody conflict. Spears crashed against shield, swords swung against swords; the figures of struggling, screaming men were all about; bodies lay upon the grass. Blood spurted about. Masses of furiously battling men were all around.

And the *Astralite* crew could only stand there in blank wonder. For the spot where the lines had met was where they stood. And the lines had charged *through* them! The figures of Carthagian and Roman had passed through the very spots the space-men occupied and they felt nothing—and they heard nothing. They saw, time and time again, a sword or spear or hand pass through the body of one or another of their fellows or into their own bodies, yet they felt absolutely nothing.

"Come on; let's get out of here!" cried Kendall finally, suiting his actions to his words by wading through the ranks of combatants and back to the *Astralite*. The rest followed.

Once inside the ship, they divested themselves of their space-suits without a word. Then, by mutual consent, the *Astralite* was raised several yards above the ground and hovered there, while the men watched at the windows the silent battle going on below.

"I can't understand it. What manner of world is this?"

"It's haunted, that's what!" said another.

"Wait a minute before we say such things," spoke up Fred Broster. "There's got to be some logical explanation."

"But what? Is this world haunted by the ghosts of long-dead inhabitants?" Kendall queried half seriously.

"In the first place, whatever these men are, they are not the ghosts of anything on this world. They are real Romans and Carthagians from the earth. If you don't believe me, look at the standards. Note the SPQR on the Roman emblem over there," Seaward remarked.

The rest realized the startling truth of that.

"You know, we don't know where this light comes from yet. It just seems to emanate from the sky," stated the captain. For a while, no one spoke. But Broster had evidently touched off something in his own mind. He murmured softly.

"Real Romans, sun but light out of sky, no sounds; yet we see an earth scene of thousands of years ago; we can't feel the things in the scene—the edges of this world's disc from space are vague and unfocussed. Unfocussed. Why? Three thousand light years or more from Earth and now an earth scene. Hmm."

Then suddenly he gave a shout.

"I've got it. It's the ether warp!"

"What?" the others broke in. "What about the ether warp?"

"Listen; I'll explain," Broster proceeded. "You know that light takes time to travel, of course. And you also know that once light starts, it goes on forever carrying with it the impressions imposed upon it. Everything that has ever happened on earth is still visible somewhere in the universe where those particular waves of light happen to be. Of course they are too weak and scattered to be really visible, but they are there. Now you remember that we passed through a great stretch of space several hundred light years away from earth, wherein the ether

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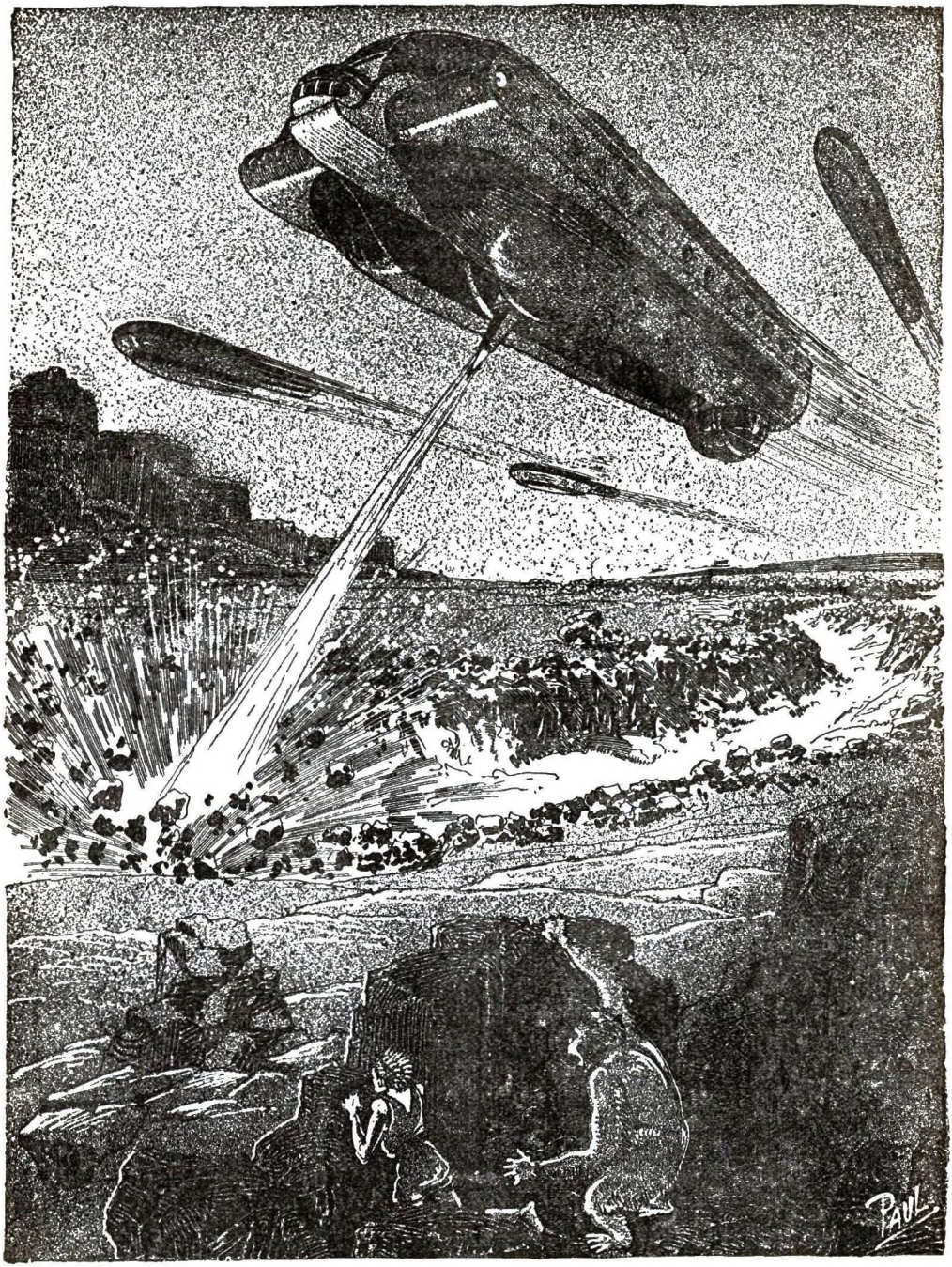


(Illustration by Paul)

Again and again a ship of the enemy got above the battle and decimated us.

THE GREEN MAN OF GRAYPEC

By FESTUS PRAGNELL

PART THREE—(Conclusion)

WHAT HAS GONE BEFORE:

Learoy Spofforth tells the story in the first person. He describes how he is in prison for the murder of his brother, Charles. He declares himself not morally responsible. The opening paragraphs show a state of confusion in his mind. He tells how his brother had perfected an ultra-microscope with which one could view electron-worlds with their swarming life. Charles finds an inhabited planet of the microcosm and transfers his brother's memory, under Learoy's consent, to the mind of Kastrove, a green, primeval ape-man of the world Kilsona and the tribe of Graypec. He finds himself in a group of his fellows attacking an injured air-ship in which they find Issa, a girl of another civilization, higher in the scale of evolution. Both of their races were degenerated from a former height of culture far superior to ours, caused in part by the evolution of the wild beasts of the jungle into creatures with primitive reasoning powers. Kastrove saves the girl from the other beasts, but he had lost his weapon and is reprimanded by the chief of the tribe, a man of Issa's race. By right of capture, Issa is given to Kastrove, but he makes her know that he is not her enemy and is trying to help her. He is madly in love with her but will not take her as his mate, being physically inferior to her. However, she soon falls in love with him also, learning that he is not an ordinary ape-man, and she finally becomes his mate. His father had proven a great help to him in keeping out of trouble on an unfamiliar world, and he was greatly indebted to him. Kastrove's superior knowledge had allowed him to win a combat with an important sub-chief, creating for himself a great respect among his fellow creatures and a great pride for his father.

The wise man of the tribe of Graypec had noticed Kastrove's superiority, and imparts to him much valuable knowledge before he (the wise man) dies. Kastrove and Issa, with their infant son, are taken from Graypec to become slaves of the Larbies, crab-like creatures who ruled those of Graypec, and they are put to war against the Gorlemites, tiny people of a distant race. Kastrove and Issa become separated, and Kastrove is afraid that he will never see his mate again. Later he is in an accident during a battle and rescues one of the Gorlemites, his natural enemies, helping him back to Gorlem. Kastrove declares to the Gorlemites that he would rather be on their side, but they do not trust him. Then he propounds one grand fabrication in which he states that he is only in the body of an ape-man, but in truth is one of the scientists of Impel, capital of Gorlem, and he is sent to that city. There, among intelligent people, he reveals the true story of his fantastic mental voyage from earth and he is believed because the scientists can read in his mind that it is the truth. Through a hypnotic influence, Kastrove, the Learoy Spofforth of Earth, reveals to the scientist many helpful scientific facts out of his subconscious that he did not even suspect he knew himself. His value along this line wins for him ease and comfort, but he is unhappy because Issa is not with him, but still a slave of the Larbies. As the second part ends, we find him starting off on a voyage in search of Issa into the enemy's territory. *Now go on with the story:*

If you were to name your favorite science-fiction characters on your ten fingers after you read the excellent conclusion to this super-novel by our English author, Kastrove the Ape-man would certainly be among the lists of many of you. He has been so graphically portrayed that he seems real and existent, rather than an imaginative creation—which realization must certainly give you a pang of regret.

When you consider that not one story in twenty submitted to an editor has the slightest chance of acceptance, you can imagine what a pleasure it is for him to note the name of an author on the title page of a manuscript who usually turns out pretty good work. Though we expected an acceptable story from Mr. Pragnell, we were certainly surprised to find this, his longest story to date, so superior to anything he has ever turned out before.

Perhaps the most striking part of this concluding installment is the most unusual denouement. You will find it a thoroughly satisfactory ending and different from the usual run.

CHAPTER XXIX

I Become a Spy

● When the sun rose, I got out of the car and pushed my way through the bushes. A sharp sound startled me, but it was only a snake among the dead leaves. In the bad light, I had to go carefully to avoid brambles and tripping roots. It was bitterly cold. My identification tab as a Gorlemite was behind me in the car; I now wore only my badge of slavery, one of the rough cloaks used by the slaves in the desert nights, and leather sandals. My hands were bare.

Soon I came upon the expanse of dried, cracked, salt-impregnated clay. Once—who could say how long ago?—it had been the bed of a lake. Somewhere to the south there was a district where rain sometimes fell in torrents lasting several weeks, and then perhaps there would not be another drop for three or four years. There must have been rain there recently, for the clay was damp underneath, an icy mist rising from it and chilling me to the bones. I shivered. After the warmth of Impel, I could not face the rigors of nature as I had done once.

For about a third of a mile, I ran along in the swinging, pivotal, hand-over-hand manner I had learned at Graypec, until I was attracted by the sounds of the chopping of wood and shouting voices. A group of ape-men were collecting fuel for cooking purposes, and for the overseers' fires. It occurred to me that it might be a good idea to make myself one of this party, and I set to work to help them load the logs onto the waiting lorry. Not one of the workers noticed that a stranger had joined them, and the fact gave me confidence. In about an hour we had loaded two lorries, and seen them off, and the woodcutters and I put on our cloaks and set off for the settlement. It was not so cold now; a little while ago it had been only just above freezing-point, and a few more hours would see a torrid sun blazing down, and all distant objects shimmering in the heat.

Soon I was among the brick barns that served the slaves for houses. I had not been recognised, for I had spent but a few days at this station, and most of the slaves were strangers to me. If anyone did recognise me, I was resolved to attack and kill him, if I could, at once, and declare I had been insulted. The main danger was that some overseer might see and know me, but luckily it was still too cold for many of them to be about.

Find Issa, that was the first thing to do. The ape-men and the yellow-haired people from the crystal cities occupied different parts of the settlement, because they were liable to quarrel if allowed to mix too freely. With me out of the way, and perhaps thinking me dead, Issa would probably go back to her own people, and accordingly I searched for her there. Half a year had passed since I was here last; perhaps in that time she had been killed in battle, or perhaps she was away on a raid now. Many of these delicate people died soon after being brought into the desert, but those who lived became clever fighters.

For a while I prowled around, causing many a woman to start in fear when she found an ape-man peering at her intently. Soon I was getting desperate, for it was harder to dodge the overseers now, and my excuse for keeping my face half-hidden in my cloak was getting thin. To avoid attention, I pretended to be on an urgent errand.

With the courage of despair, I stopped a yellow-haired man and asked him if he could tell me where I could find a woman named Issa. He glowered at me with suspicion and hate, after the manner of his kind, and asked what I wanted of her. I said I had a message from an overseer.

He had last seen her, he told me curtly, with others, on my left going towards the outskirts of the station.

Then at least, I thought, she is alive and close at hand. If only I could have been sure that no overseer had been forcing unwelcome attentions on her, I should have been quite happy. I went on searching for her.

● Now, every man or woman has some memories that he or she would like to forget, and the higher the standard one tries to live up to, the more the uneasiness that is suffered in this way. In telling one's own story there must always be a temptation to suppress such facts, to put everything in a good light for one's self. In my story so far, while there is nothing deliberately untruthful, I rather feel that I have given a better account of myself than strict impartiality would require. For instance, I have not told how, at Graypec, a small cub threatened to tell of a remark he overheard me make to Issa that was insulting to the chief. It was at the time when I was daily expecting to be murdered by the secret orders of the chief, and I chased that boy and dashed out his brains with a large stone. Life was cheap on Kilsona.

My reason for putting these remarks here is that my visit as a spy to my old station contains some incidents that I would like to forget; but I have decided to put everything down exactly as it happened, without any attempt to conceal anything or to justify myself, except to say that I was surrounded with enemies. All is fair, somebody said, in love and war, and I had both excuses.

I had been everywhere where Issa was likely to be found, washing places (for some of the people from the crystal cities still washed themselves at times), sleeping places, cooking places, food-preparing places, without success, and I must have been getting careless, for I suddenly found myself face to face with a young man I had known quite well at the training establishment where I learned to handle sand-cars. He was a nice youngster, came from one of the crystal cities, and his wavy yellow hair made him quite handsome. On seeing me, he looked astonished.

"W h y, Kastrove!" he exclaimed. "How—"

His words died away in a death gurgle as my knife plunged into his lungs; his look of pleasure gave place to one of pained surprise.

Quickly I looked around to see if there were any witnesses of my action. None were to be seen, but I heard running feet on the hard-packed sand; somebody knew. Soon the story would be passing from mouth to mouth and growing as it did so: "The ape-men are prowling through the settlement and murdering all the people from the cities!" Unless the overseers were prompt and firm there would be trouble.

That, however, was their funeral and no business of mine; I did not bother about that because I felt I now knew where Issa was. Close to the station was a farm of about a dozen acres; it existed mainly to provide variety for the overseers' diet. That was the only place where I had not looked, and it had been in that direction that Issa had been walking when seen by the man I spoke to. Fool that I was not to have gone there before!

The farm was strongly fenced against thieving animals, and had two wells with pumping machinery to provide water to fill the network of irrigation canals. Pushing open a gate and walking in, I found a group of women slaves, all from the cities, gathering vegetables rather like runner beans. To my delight, Issa was one of them.

It was no use rushing straight up to her, because she was in the middle of a small crowd, and it was against orders for an ape-man to mix with the people from the cities while they worked. Somehow I must arrange to see Issa alone.

There was plenty of time, now that I had found her, and for the present I contented myself with hiding among the herbage and watching. Very rapidly they worked as they stood astride their rows, stripping off the vegetables and throwing them into bags they carried on their hips. Now and then one of them straightened slowly and stood for a while easing an aching back, but they dared not stop work for long. There was very little paint on their faces now, and their bodies were deeply sunburned instead of showing their natural paleness. I felt suddenly very sorry for them; this life was very hard

after the luxuries they were used to—the tougher ape-men, of course, could stand the conditions better.

As each of the women filled her canvas bag, she carried it to where a female overseer stood on the path beside a motor-driven truck. The overseer weighed each bag and entered the weight in a book; then the slave would wait and look anxiously on while the contents were slowly tipped into the truck. Bad work meant a cut from the whip, and the mark would remain for days. Each of the slaves carried a gun that could blow a man's body to fragments; yet so completely cowed were they that it had never been known for a slave to turn on an overseer. However, had the sour-faced female raised her whip against Issa, she would have been the first.

● I had come, it seemed, when the morning's work was nearly done, for the truck was loaded almost to capacity with different kinds of vegetables. With success in sight, I didn't mind waiting, and I crouched where I was for another hour or so until the woman overseer called off the pickers, collected what was in their bags, and drove away, out of the garden in her motor-truck. The pickers walked slowly to the nearest well, gulped down water that they scooped up from a drinking-trough with their hands, then jumped, without taking off their scant clothing, into a pool of tepid water, and went to stretch themselves on their backs in the nearest shade. It must have been near the hour of noon, and the world was like a huge frying-pan. My back had been exposed and I could feel the tingling sunburn on it, the ultra-violet burn that lingers for days and peels off the skin.

Seeing that the workers were all asleep, I got up and helped myself to a long drink out of the stone trough. Either by accident or by design the water had a slight taste of salt. It reminded me of the words of the chief of Elboaz that the human body needs more salt in hot weather than in cold; apparently the other side knew this, too. Should I walk over to the sleeping slaves and rouse Issa? If I did, she would perhaps scream at the shock, and the others, seeing a cave-man where no cave-man should be, might start a disturbance that would soon bring an overseer from another part of the farm.

I tried calling to her, but she slept too deeply to be roused; then I threw small stones at her. One of these woke her, and I called softly, "Issa, Issa!"

"Who is it?" she demanded, looking frightened.

"Behind the well. I want to speak to you."

"Who are you?" She came at last, slowly, keeping well away from the machinery I was hidden behind. As soon as she saw me, she knew who I was. "Kastrove!" she gasped, softly. A moment later she added, "I thought I knew your voice or I would not have come."

I felt subtly hurt because she did not at once run to me, but just stood there staring at me with big eyes.

"Yes, it is I. Come here and sit beside me. I want to talk to you."

There were many scratches on her arms and legs, and she looked tired and ill. "You ran away," she accused me in a dull, lifeless voice, not moving.

"Yes, I know. I can explain all that. Come here." I had not expected to be put in a position of having to justify my actions, and it annoyed me.

"With an escaped prisoner," she went on. "You left me and went to the enemy—your own people, the Gorlemites."

"Let me explain."

She came closer, but kept the machinery between us. I felt I was losing ground by arguing, that the best way to convince her was to throw my arms around her and kiss her; I wanted to, but she kept me at a distance. Not since our first days in the caves of Graypec had she treated me thus.

"I always knew you were a spy," she said, "but I shielded you. Why have you come back and exposed me to more danger?"

CHAPTER XXX

I Start a Battle

● "My love," I was growing anxious, "I want to take you away from all this work and danger and hot days and cold nights. I can take you to where you can be happier than ever you were at your home in Teth-Shorgo — a wonderful place. Listen. We can slip away from here together, out of one of the gates; no one will see us go, and I have a car waiting and friends. You need never work or fight again."

She wrinkled her brows in a little puzzled frown she had. "I do not understand. You want me to run away—with you? After all this time?"

"Why, of course. I still love you; I did not mean to leave you. I could not come back before; I have taken great risks to come back for you. Listen; I will slip carefully out of here and be waiting for you outside that gate. Just trust me."

"Yes, but," she began, and stopped. It was as though she had something to explain but found it difficult. "Oh, you are such a funny man, Kastrove!" she exclaimed, turning her head away.

I was losing patience. "Why, what's the matter? Why don't you say you will do as I ask?"

"Don't you see, Kastrove," her voice was low, "you went away, left me, for months. I thought you dead . . . . or tired of me, anyway—"

It was like a blow in the face, dazing me. "And you, you took another mate?" My voice must have been loud, for she looked anxiously around to see if I had been heard.

"What else could I do? What did you expect?" I hardly heard her, so quietly did she speak.

I groaned. "It matters not. You were mine first; I want you. You must come with me."

"No, I cannot!"

"You must; you shall. I'll make you!"

"Do talk more quietly. We shall be discovered and you will be killed and I punished. Go away, Kastrove, while you can. I will say nothing about your coming."

A false calm came over me, only hiding the seething rage in my mind. "I'll not go without you," I declared with finality.

One of Issa's co-workers stirred and stood up. Issa went quickly back and threw herself down on her face while I slipped away from the pump and hid myself. The female slave drank from the trough, and I had an uneasy feeling that she had seen me, but she said nothing. My head was aching badly, but whether because of the turmoil inside it or whether I had a touch of sunstroke, I do not know. I was feeling dizzy, not quite sure where I was.

Some impulse made me work myself through the herbage to near the resting slaves, some of whom were presently sitting up and talking. Somebody, it seemed, had come from the station and brought news of shooting and rioting. The man I had killed had been the cause of the trouble; a band of people from the cities had begun shooting ape-men in revenge, and many of both races had been killed. The situation had gone from bad to worse until the overseers started using machine guns to restore order. Such was my state of mind that I laughed softly at the news.

The women shook one another awake, talked in tones too low for me to hear, then went away in different directions. Straining my ears I could hear the sounds of bullets exploding in the distance; things were certainly happening in the settlement.

A sharp stone hit me, and I looked around to see Issa not six feet from me, beckoning, one finger on her lips. I crawled to her side.

"They know you are here and they are looking for you," she whispered. "I could not let them kill you."

"Then you do love me still," I said.

I threw one arm round her and ran openly along a line through the tall growths. I saw the back of one woman slave and the side of another, and two explosive bullets accounted for each. I

also fired at a moving leaf some yards off and at a rustling sound. There were other shots, but who fired these I do not know, perhaps Issa.

● I had acted impulsively, and no question of whether my actions were right or wise entered my head. My cloak lay where I had been hiding, and I half dragged Issa along the path with me. An overseer appeared suddenly, and I shot him casually, as one might kick away an obstacle in one's path.

Issa was running beside me, and we made for a door in the fence. There was no pursuit except for one lone man of the cities, who ran along the path showing both of his hands, which were empty.

"Don't shoot," cried Issa on seeing him, and snatched at my arm needlessly.

Wondering who this young man could be who took such risks and who was apparently so well known to Issa, I watched him come racing up. "Not that way, Kastrove!" he called as he neared us. "Follow me!"

His use of my name was startling, and it seemed to me that Issa herself gasped in surprise at this. He was a stranger to me. Had I been alone, I should have ignored him, and gone on out of the nearest door; as a matter of fact, there was no escape that way, but Issa followed him without hesitation, and after a moment's uncertainty, I went after her, bewildered. The three of us climbed onto one of the automatic trucks, which promptly shot away with us out of another gate, our new friend driving.

We found ourselves on a sort of tarred road, except that a kind of rubbery material had been used instead of tar to bind together the flints. Along this we made surprising speed.

"Anybody following?" shouted the driver, without looking around.

"No," I shouted back, above the noise of the engine, the wind, and our solid tires, then, "Yes! Two trucks have just appeared."

"They will never catch us. Too long a start," he flung back.

"Where are you going?" I demanded in sudden suspicion, seeing that we were headed for the station, not far away from it.

"Trust me, Kastrove, servant of Impel," he answered. He seemed to know all about me.

"Who is he?" I asked Issa.

"My mate!" she screamed back.

Then this was the man whom, as I lay among the vegetables, I had dreamed of murdering. He was a sharp-eyed man with an air of alertness. For a moment I wondered if he were a Gorlemite in disguise, but he could no more have been a man of that race than a typical Englishman could be a disguised Chinaman.

We were among the scattered bungalows of the outskirts of the station now, and there was certainly a lot of shooting going on. The air resounded with explosions, and light shone through holes in the walls of the huts.

"Where are you taking us, Zimbo?" cried Issa, suddenly.

"Trust me," he said again. We were fully exposed on the uncovered truck, and a man of the cities fired at me as we went by. Zimbo shot him down with his free hand; he had all the skill of a Gorlemite in shooting.

"Out!" he cried, stopping the truck. Issa and I jumped to the ground, followed by Zimbo. A moment later the empty truck started up and raced away across the plain.

"Our pursuers will follow the tracks until either our truck or their trucks get stuck in the sand," said Zimbo, smiling. "Ours should go furthest, being lighter." He knocked with his knuckles on the door of a hut.

The door opened from the inside, and three men and two women showed through the opening. Before I could breathe, we were within, and the door was slammed and bolted.

"Who are these?" asked somebody.

"Kastrove, Issa," said Zimbo, pointing to each of us in turn; but he did not complete the introduction by telling us who our hosts were. Issa's round eyes showed

her to be as puzzled as I was. The single-roomed building, simple as it appeared from the outside, had been fitted up in the interior almost like a fort. Thick steel plates covered the walls, and there were a number of long, narrow windows, wide inside but a mere perpendicular slit from outside, like the windows one sees in the stone walls of old Norman castles, where archers used to stand and shoot arrows at attackers. The two regular windows of the room had steel shutters in which were small round holes. For the rest there were chairs, simple beds, cupboards, a pump, and a trapdoor in the middle of the floor.

"Splendid," said the man who seemed to be in charge, on hearing our names; "now we are all here."

"What do we do now?" asked Zimbo. "Leave these two in safety here and go out and join in the fight? Or shall we send them along the tunnel?"

"Neither. If we went out now we should be shot down by our own side; our duty is to stay here and guard the tunnel. We have done our part in these long dangerous months of spying."

● At the last word, Issa let out a shrill cry, and two men ran to the windows to see if anybody had heard.

"Warn that woman to be quiet and take away her weapons," said the leader. Issa was disarmed.

"Who are you and what is happening?" I asked.

"Tell him, Zimbo."

"It was like this," began Zimbo; "when you walked out on the committee at the village, it was decided to let you do as you liked, but to provide all the protection for you that could be given. I had the job of looking after you here among the enemy, and got word that you would arrive this morning. It was rather a problem at first, because I had never seen you, and I could not know everybody at the station well enough to spot a stranger at once; but when you arrived, you were such an obvious spy with your cloak and your furtive manner, and when you asked for Issa, I was sure. Since then I have been following you, and just as well I did; the mate of the man you stabbed heard of it, got a description of you, and would have shot you if I had not thrown a knife and killed her just as she was about to fire. You got blamed for both murders, and that is what started the racial riots."

"Wait a minute," I said. "You are going too fast for me. The slaves are allowed mates here then?"

"The people of the cities, not ape-men."

"And Issa here is your mate?"

"Yes," they said together.

"I understand," I said with a catch I tried to hide in my breath, "and who are you?"

"I," he replied, drawing his slender figure up proudly, and watching Issa's face, "am a soldier of Gorlem and therefore of Impel—at your orders. My parents were from Teth-Shorgo, deluded slaves of the Larbies, and my mother bore me while in the underground village, a prisoner of the Gorlemites. The Gorlemites brought me up to fight for them, and the same is true of my comrades here."

A moan broke from Issa, whose face was white. "Then I am a prisoner?"

"Sorry, but it can't be helped. You would sooner be that than dead, I suppose; and everybody at this station will soon be one or the other. And you need not worry, because Kastrove here has plenty of influence to protect you."

"Go on with your story," I put in.

"Well, the six of us established ourselves here as spies to prepare for an attack on the station, and owing to the slack way we found things to be organized here, it has been fairly easy. Nobody noticed several extra slaves moving about the station during the day and dodging patrols," (by this he meant the expeditions into the desert in caterpillar cars) "by slipping away to sleep in this deserted building at night. If we got stopped, our discs were in order, taken from dead men, you know."

"Then there was no need for me to come here at all?"

"None whatever. But you walked out on the committee when they were trying to tell you to leave it to them. You see, there was just the possibility that you were not all you said you were; even Impel can be deceived, and the committee hesitated about revealing all our plans to you."

Outside could be heard the sounds of battle coming nearer; the five who had been in the hut before us stood at windows and seemed to be sniping through them with their silent weapons. In order to preserve the innocent appearance of the building, the metal shutters had not been closed over the windows yet; out there men's and women's bodies, for under the Larbies women fought as well as men, must be suddenly exploding with nothing to show where the shooting was coming from. It must be very nerve-racking. Presently there was such a violent explosion that I thought the hut we stood in had been blown up, but our armor-plate resisted the shock though the covering of bricks was torn off on one side and the true character of the building revealed. The steel shutters were closed over the windows. When I glanced out of a hole in one, I saw that nearly every hut was down; there was nothing but scattered bricks between us and the distant fence.

"Look!" said Zimbo, raising the trapdoor by means of its iron ring. He disclosed a round black hole across which a stout metal bar held a rope. There were pulleys by means of which a man could pull himself up or lower himself down into the blackness.

"Our secret tunnel. We drove it from the clay of the dried lake through the solid rock right to the central building of the station."

"A tremendous task."

"Our diamond-toothed drills cut rock as though it were cheese; the chief difficulty was the water. When fighting broke out all over the station and the overseers set to work to straighten matters out with machine-guns, we decided the moment had come to strike. Massing under the central building, our men let loose a deadly gas to overpower the gunners, then guns and searchlights were ours, and with them the station, for the guns command every part of it."

"Well," I said, resigning myself to my bitter loss, "I hope you will be happy, Zimbo, and you, Issa."

● He misunderstood me altogether. "I am proud," he declared, "to have been of service to you in looking after her while you were away." And, you know, both he and Issa thought this was the way I ought to look at it; it was part of the queer and rather primitive attitude of all Kilsonians towards sex.

"I would not take her from you," I said, dully.

Which seemed to surprise him. "You are my ruler," he replied. "If you want my life, it is yours; if you want my woman, she also is yours."

"Then the wishes of the woman must be considered."

He rolled his eyes as though to say: "That is a queer idea;" then to Issa he said, "Choose him; you will be comfortable at Impel."

Issa hid her face in my hairy chest. Zimbo gave a sigh. For an instant I understood him, and the deep feelings that he hid so bravely; then he pulled himself together sharply and went to help in the sniping.

"I am happy now," I said to the mate I had recovered when she seemed lost to me forever.

"And I. I loved you always, but I had given him my promise, and now that he has released me from it, I am happy."

I heard my name shouted; it was a party of the soldiers from the village, who had captured the station, advancing through the ruins and asking if I were safe.

"When you get to Impel," I said, "you will soon get some flesh again over those bony ribs you have now."

And she did.

* * *

Back at the capital, I lived very happily with Issa. My work as a scientist

was soon at an end, for they seemed to have sucked my subconscious mind dry of useful information. Preparations for the establishment of the mass-production factories were being pushed forward, and I found myself with more and more time on my hands. Accordingly, I set myself studying the music, art, literature, and history of Kilsona. Much I learned that I cannot set down here, though some of it was very interesting. Perhaps later I may write a book on the philosophy of Kilsona, perhaps several books. I am undecided.

But there are some matters I feel I ought to give now, a brief summary of the previous history of Kilsona. I am making this a separate chapter.

CHAPTER XXXI

The Story of Kilsona

Now here I must confess myself in a difficulty. I am telling this story, in the first place, to lead up to and explain the awful tragedy that finally overwhelmed me, but as I go on I find myself attempting to do more than this. Instead of writing a few pages, as I first intended, I find I have now covered several hundred sheets of paper and taken many weeks to do it. There is plenty of time; I now know that I am not in prison awaiting trial for murder. I am in a madhouse. This story is my attempt to justify myself, to prove my sanity, and that is one reason why it has become so long. Beyond this, I feel that the best service I can render my poor brother is to publish all the facts known to me that resulted from his experiment; he deserves his share of fame, and if nobody believes this story now, there will come a time when they will believe. Someday somebody will repeat Charlie's discoveries.

These are reasons why I should give at length the history of Kilsona, which I studied at intervals for years; yet, as I write, I feel that other people, besides scientists and lawyers, will read these words, and I am anxious not to put in anything to bore them. History is a dry subject.

After much thought, I have arrived at a compromise; I will put a summary of the history of this strange world into a separate chapter, so that those who want to go on to read of the later struggles of Impel, capital of Gorlem, and of the rather prominent part I played in them, can skip just that one chapter. Here, then, is a summary of the history of Kilsona as I pieced it together from the records.

Once there had been on this world a civilization very closely resembling that on earth to-day. It rested, as we do, on a foundation of steel machinery driven by coal and iron, and defended itself with explosives. There were three main races of men: a dominant race (corresponding to our whites), an older race in decline (corresponding to our yellow races), and a younger, simpler people who corresponded in some ways to our negroes. The white men were divided into many nations, and had armies, navies, and fleets of airplanes.

After much study, I fixed on what the Kilsonians call the eleventh century as the nearest approach to our twentieth century. Steam machinery had then been in use about two hundred years, and in other ways the similarity was great.

The power of nations varied; sometimes one would hold a domineering sway over the others, sometimes another. At the opening of the eleventh century, the most powerful nation, as far as one could be traced in the changing lines of treaties and alliances, was quite a small country that lived in a tiny group of islands. Their name is almost impossible to translate; I will call them the "A" islanders.

The A islanders had colonized large tracts of what had formerly been savage country, and this accounted for their importance; they occupied much of the earth's surface. This was due, partly, to the cold, treacherous, changeable climate of the islands, which made those who survived it very hardy, and perhaps gave the islanders a subconscious longing to travel and find some more pleasant spot

while other peoples were content to stay at home, and partly to the war-loving temperament of the islanders, due to the small size of the islands, where no one could feel quite secure from a sudden raid from the sea, to the fact that little more than a thousand years before the islanders had been a race of pirates living in a still colder country, and to the fact that almost throughout the history of the island there had been never-ending, bitter warfare between the people of the South and the people of the North. The small size of the island also had the important effect of making a large proportion of the inhabitants sailors.

One of their mottoes was: "Get the first blow in; that's the one that counts." They were, however, very open in their actions, and seldom armed themselves. When in a rage, and they were easily roused, they would walk up to one and strike one on the face with their fists; they would never strike with a knife from behind or shoot from hiding; and thus these most quarrelsome people were the safest in the world to live amongst.

● For a time it seemed that these people would inherit the earth, except for the hotter parts of it. Then their star began to wane. In the early days of the machine age, when energy and determination were needed above all, they reigned supreme, but in the later phases, when close study was required, they fell behind. Their climate was not suitable for sitting still and thinking out problems, nor for the study of books. The A islanders were like a champion boxer who wins a fortune by sheer grit and pluck, only to lose it because he has not the brains to hold on to his winnings.

The great country that rose to take their place I will call the B continent. The people of the B continent were mostly descendants of the A islanders who had first colonized that country, but there were other strains in their blood. Their chief characteristic was a sort of mental boldness, a willingness to try something new, to make experiments. A love of taking chances instead of playing for safety always leads to trouble, but is usually justified in the end. One gathers that these people, as a whole, were rather too easily fooled by canting politicians, fraudulent religious leaders, unsound sharepushers, and the like; but on the other hand, their taste in music and literature showed them to possess a high average of intelligence.

So much for the leading peoples. Now for all this machinery, this world was far from being a happy one. There were a few rich people and millions of poor. In every country millions were unemployed, badly clothed, half starving; the world struggled out of one slump to plunge into another and worse one; there was a superabundance of everything, and the majority went short. There were shoemakers out of work, leather thrown away because it could not be sold, shoe-making machinery idle and millions of men, women, and children without shoes. Land went out of cultivation because farmers were bankrupt; food was thrown into the sea because the price was too low and millions went hungry. Thus it was in every phase of human activity, the worst state of muddle that can be imagined.

(I am not giving my own views now, but those of the scientists of Impel.)

Men were all too busy with their own particular jobs to wonder why this was. But there was a class of men who wrote for a living, and these had to make a pretense of working at the problem. About the most sensible of these was one H. Geewells. All he had to say was: "Human society has grown up by chance; what is needed is collective planning." Simple and obvious as this was, it took him all his life and about a hundred books to say it; but it must be remembered as almost the only clear, coherent thought produced in all this age about its troubles.

The simple fact was this: humanity had been betrayed by the scientists, and the people of that day could not see it.

Science had swept away, except for the forms, many of the old religions, and to millions of people science was the new

religion. Science had given them abundance of food, clothing, shelter, power to fight the beasts and the weather, wonderful ships and cars and airplanes and films and radio and television, was visibly conquering disease, and would lead them to the marvelous world of the future, where there would be no more work and none need want. Man existed that science might go on, not science that man might go on. Science was the master, not the servant of man. And the scientists themselves, though poor as the priests of powerful religions have often been poor, lost their heads and preached that abstract reason was the final goal, and the gathering of knowledge the purpose of life. They did not know that knowledge gained without purpose is a curse.

● So they studied dead things, atoms and planets and rocks, and forgot to give attention to the living beings whom it was their business to look after, men, except for the visible body. Now there is a science that deals with society, with prices and wages and incomes and distribution, the very things in fact that were so obviously out of order. That science is Economics. Now the science of Economics was in a very backward state; all it could show were a collection of obvious facts about such things as supply and demand, a lot about rates of exchange and international price levels and such things, padded out with the arguments of politicians for or against their own or others' programs. That was called a science, and the books about it were so badly written that an ordinary man could not understand them (a common failing with books on science.) The economists had no guidance to offer mankind in their troubles; men fell back on quacks of politicians who offered such remedies as tariffs, free trade, socialism, nationalism, communism, dictatorship, and a hundred other forms of dangerous—ignorant meddling, just as doctors once bled patients to death to cure headaches.

But the chief failure of the scientists was not in the field of economics but in that of Psychology, the study of the mind of man. Men lived constantly in fear of war, and with the weapons provided by science growing ever more deadly, war became a more and more disastrous thing. Now the real reason for war was that the average man, especially the poorer ones, in every country, was really too stupid and ignorant to want peace. He opposed a stolid apathy to all efforts at securing peace, and always voted for the man who showed "spirit." His education was at fault. But how was education to be improved, to make better men? It was the business of psychology to show, and again the scientists failed, for psychology was almost as backward as economics when compared with the wonderful advances of physics, chemistry, and astronomy.

Thus men were without guidance in the things that mattered.

The climax of the failure of science came in the thirteenth century, when a terrible war, much as described by H. Geewells in his book, "War from the Clouds," destroyed every big city on the face of the world. Only the small towns and villages were left, without means of communicating with one another. It took hundreds of years for mankind to recover from the shock, as far as they ever did recover, and when they did, each town lived on its own, had nothing at all to do with its neighbors, and murdered any stranger that ventured within its gates. The big nations were forgotten. To this pass had the race of man been brought by the worship of reason.

This state of things continued for hundreds of years. There were no country folk now, for science had shown how all food could be produced in the towns, and the countryside grew wild and dangerous. Science was forgotten, except for what was necessary to produce the necessities of life, and the physical and mental standard of the race went steadily downhill.

The records of these times are very incomplete. It is not definitely known where the green ape-men first came from, but it is supposed that some mad scientist after the war played at producing human

freaks by the use of X-rays on the embryo. Among them he must have obtained a type of very powerful, savage men with long arms and short legs and covered with green hair. Somehow these freaks must have escaped into the empty countryside where they lived in caves and multiplied freely. In time there were millions of them, and they were the biggest danger of the savage countryside.

Thousands of years passed without noticeable change, except that the intelligence of the beasts slowly improved while man slipped back. Men had lost nearly all the qualities of which they were once so proud. Then came a new form of life, life profoundly clever, malicious and ruthless, the Larbies. Some thought they came from another planet, but probably they had existed for thousands of years, unsuspected by man, in the mysterious depths of the sea, and now came out to conquer the land. With huge airships and guns they first attacked A island, and practically annihilated what was left of that once proud race before they realized the surprising fact that man had so lost all backbone as to be incapable of putting up any sort of resistance.

From then on they slowly widened their territory, destroying men or letting them live as the mood took them, for hundreds of years, until they came to the land of Gorlem. Here they were actually fired on by men! Amazed and furious, they attacked and destroyed the cities of Gorlem, finding that men here still had enough of the old spirit left to hit back, although the fight was hopeless. Some ships got damaged and had to go back for repairs.

The rest of the history of Kilsona is the story of this war.

CHAPTER XXXII

Danger in the Sky

● Having finished the dull but necessary business of giving the history of Kilsona, I will now try to keep as much as possible to my own personal adventures and make all other matter as short as possible.

In doing so, I shall have to skip over the next four and a half years as lightly as I can, for though many events occurred during that time, naturally, most of them were either too trivial for me to feel justified in telling my readers, if any, about them, or too dry for anybody not a native of Kilsona to be interested in. It is so difficult to know what to leave out, to select the things that matter from the great mass of incidents. It must be a lot easier, I should think, to tell an invented story than to give a correct, impartial view of one's own life as one has lived it. One is tempted to make a hero of one's self, or reacts to the other extreme and makes things look needlessly wicked. Still more difficult is it to tell of the times when one was made to look foolish. The same story can be told in a number of ways, all equally true.

To summarize, then, those four and a half years—first, as far as I was concerned.

Issa bore me three children during that time, all fine normal-looking kiddies, two boys and one girl. Getting to hear that the learned men of Impel had methods of changing one's appearance, I asked them if they could make me look more like a man and less like a beast. Accordingly, they injected into my veins something that made all my thick, coarse green hair fall off. Every particle on my body came out, so that I had to wear a wig and false eyebrows; but it made me look a lot more human. Then they altered the shape of my nose with a growth-promoting process, pulled out my huge, protruding teeth and fixed me up with a fine set of false ones that were joined onto the bone. When they had finished, it was a queer sort of man I looked like, but at least I did look like a man, not an animal.

Meanwhile events were moving swiftly up to what was to be a tremendous climax. Plans for carrying on the war more effectively, perhaps to strike such an effective blow that man would cease to be a hunted creature but would win back all his old rights and drive the Larbies back into the sea, were being pushed forward,

the same plans as I had heard being outlined by the chief of Elboaz. The first step was to centralize at Impel all production of caterpillar cars, guns, ammunition and other war equipment. To do this many underground factories were being built scores of miles apart, and drawing power from the natural underground heat. Each of these factories made one particular thing, and the parts were to be put together at Elboaz.

They could not start until the great "blanketing ray" was working, so that the enemy could not find them with detectorphones. Meanwhile the second part of the plan was being worked out, and particulars of it were being sent to all villages, to cheer them up and make them see the reason for the change. On each of the new cars was to be what was called an "invisible searchlight," a piece of apparatus too complicated to be made in the villages, but likely to be very useful.

The searchlight itself was a fairly simple thing; it consisted of a beam of infra-red light produced by an ordinary electric arc light with a screen to shut off the visible rays. The difficult thing was to make a screen through which one could see this invisible light, but the men of Impel did it. It was a queer experience to use one of these machines; the scene before one would be as dark as pitch until one looked through the screen, and then there would be a flood of blinding light playing across it, brighter than the strongest daylight. It was easy to see that during the night a car without this machine would be at the mercy of one that carried it, and I was proud that it was partly my own suggestion that led to the making of it.

● Two years from the time when I first arrived at Impel the factories were all ready, waiting for the word "Go!" For the first time for thousands of years, the Larbies were to be openly defied; after ages of scurrying like rats from hole to hole, man was to sound an open defiance. The enemy were bound to catch the vibrations of our machinery and to understand; we defied the thunder and the lightning; for all our bold manner, I think many a thousand hearts trembled in secret fear as the day neared, and felt sure in their own minds that Impel would be destroyed on that day. But not a word did I hear of anything but bright, cheerful optimism.

I was in one of the underground factories when the zero hour came. Slowly the long black hand of the time indicator crept to the fatal mark, reached it. For a full minute nothing happened, because the sound-waves had a long way to travel.

Before me was a lighted map of the Desert of Impel. Suddenly a red spot showed on it, wandering about the map as the indicator tried to show where the sound was coming from. Once it passed over us, and I could hear the drone, whine, and rattle of machinery carried down to my ears through half a mile of stone. And all the time, there was nothing there, only a distant machine producing rays.

Lines of silent machinery stretched away from me in three directions among the avenues of squat pillars that supported the half mile of granite and basalt above us. Among the machines the mechanics stood waiting for the throwing of the switch that would feed their metal monsters with power.

"Is it not time to start?" I murmured, unable to endure the suspense, as the manager and I stood watching the indicator.

"Not yet," he said, quietly.

As he spoke, a second red spot showed, wandering and weaving about the map in a sort of fantastic dance. Close upon that came another, then more and more, until the whole indicator was one mass of flickering red.

Then the manager gave the signal. A watching man closed a switch as his arm moved, then pulled over a huge lever, slowly feeding more and more power into the great motor. With many squeaks and crackling sparks of protest, the driving machine turned over like some awkward monster stirring uneasily in age-long sleep. Naked copper points reflected the

light, chasing one another into darkness, little blue-white sparks flashing about them. Faster and faster they went, until the low rumble of their motion grew into a nearly inaudible drone of power. Belts and shafts revolved, carrying the power to loose wheels that spun idly beside each machine. Here and there a belt was guided onto a fixed wheel and one of the smaller machines started up. One by one the larger ones joined in.

Already a smell of warm grease was beginning to fill the air. The workers were slim, gray-clad figures, male and female, and not yet quite sure of their strange jobs. Their arms and legs were bare.

A big machine changed its note and ran to a stop. Around it the manager and several mechanics gathered, and while they were looking for the trouble, I slipped away.

The age-long spell had been broken: we had sent forth our defiance and nothing had happened; men could now hold up their heads again. We were free from the ancient yoke.

I went back to Issa, and to my studies of music and literature. Neither Issa nor I had much idea of music, and we argued much about it.

"This man is better than that one," she would say. "His notes are always exactly right; his voice is stronger. . . ."

"Maybe," I would say, "but he sings without feeling. Now take this man; his song is supposed to be sung to his dying sweetheart. Notice how he throws himself into it, the aching sorrow in his voice, the longing. . . ."

We were sorting out a series of records made many thousands of years before, sorting the wheat from the chaff, and thus we sought to impose our views of art on future generations of Gorlemites.

● For weeks there was no "news". In other words, everything went according to plan, the Larbies seeming to take no notice of our new activities. The many men who stood by guns and viewing-boxes, or watched for the approach of the land-dreadnaughts, or guarded the hidden system of mines and pitfalls, must have wearied of their monotonous jobs as weeks passed and nothing happened. Already the first new cars, fitted with invisible searchlights, were roaming the desert, proving remarkably deadly. Each was fitted with a bomb that would cause the car and its occupants to blow up if a strange hand opened the door, so that the secret could never fall into the hands of the enemy; but so far, not one of them had been lost. Soon we began to mark on maps the ever-growing areas where the Larbies had been driven out and their stations destroyed.

Months passed, and still no countermove was noted. We began to ask whether the Larbies were preparing some sudden attack or whether they were content to let us win back all the land of Gorlem. The younger men thought the enemy finally beaten, but the older ones shook their heads.

Months grew into years until four and a half years had passed since the time when I had brought Issa with me to the city of Impel. Then the long-expected blow fell.

I was listening to a piece of music when the buzzer rang, informing me that my tutor would like to see me. It was my old friend of the magnifying spectacles, and I hurried to answer, for I saw little of him nowadays.

On the way to him, I noticed that a remarkably large number of scientists and helpers were neglecting their work to stand about and talk. There was something unusual in the air. My friend came to the point at once.

"They are coming, Kastrove," he said calmly.

"The Larbies?" I cried, incredulous, uncertain whether I was glad or afraid.

"Yes, the struggle is about to begin. Three fleets of huge airships have been seen, traveling over the desert and seemingly planning to meet several miles to the north of us. There is no reasonable doubt that they mean to attack us."

"Remember your promise!"

"I have not forgotten. You wanted to be with the defenders at the very point where the enemy fleet first touches the Desert of Impel, where the first shock will be felt. Defense Post Number 536 seems to be the most likely to be the sufferer, judging by the reported movements of the enemy. Get into the elevator and a special small speed-car is ready at the top to take you there within half an hour. Reach them before they go into action, or you may be stranded in the open, unable to get to the post or a village without revealing its position."

Defense Post Number 536 was situated in a region of tumbled rocks, a wild-looking place in which I doubt if I could have found my way back to the post again without help. My driver took me there safely, and we hid the car in the shelter provided and walked the last hundred yards.

"All correct and at your orders," observed the commander, recognizing me.

"Nonsense, treat me as a spectator," I told him. "Have you sighted them yet?"

"Several minutes ago. Look through the telescope."

It was a double-barrelled instrument at which one used both eyes at once. Through it I saw a cluster of dark, oval shapes, about a hundred of them altogether, I calculated. At that distance they did not look very dangerous, a crowd of tiny minnows; but if they were as big as some of the ships I had seen, then it really was a fleet to fear.

"Remarkable how well I can see them. Telescope shows them up as though they were not invisible at all."

"They are not invisible," said the commander in an ominous voice.

"Not invisible?" I thought aloud. "They must be very careless to discard their chief advantage like that. Of course, we can overcome the invisibility by means of viewing boxes; but having to use them makes it much harder to aim. It will make things easier for you and your men if they stay visible; but of course, they will alter that as soon as they are near us."

"If they think it worth the trouble," he said. There was something very grim in his voice.

"Why, of course it will be worth the trouble." The frown on the man's brow worried me. Could it be that the oncoming ships were so confident of their power to crush us that they set about the task in such a contemptuously open manner? What had they been preparing in all those long years in which they had made no sign?

"Somebody is firing at them," said a voice. It was a man who was watching through another telescope. I turned back to the instrument.

In the air about the fleet appeared bright flashes that were the bursting shells, only neither we nor the ships under fire could see where the shots were coming from. Very bad shooting, I thought, seeing that the ships were going much more slowly than usual, and were not troubling to conceal themselves. Then I gave a cry of delight, for a shattering shell had burst fair on the underside of one of the invaders. That shell had all the explosive force of one of the biggest mines or torpedoes used in naval warfare; what must its effect be on a light airship, even if it were bigger than a dreadnought?

The force of the explosion lifted the rear of the great vessel, making her nose dip; she was beginning to dive, but the automatic adjusters, still working, righted her, and she began to settle down on an even keel.

It took her a long time to crash; she even partly overcame the fall and began to rise. . . .

Was it possible? The ship I thought to be wrecked had rejoined her companions and was going on as if nothing had happened!

"Shells seem to have no effect upon them," I muttered, awestruck, to the commander.

"I know," was his only reply.

Many thoughts ran through my mind in a flash. Against that huge fleet, I now saw that we were helpless; the defensive cordon around Impel, which I had thought

of as a great wall of armor, now seemed as flimsy as a net of spiders' webs.

"Best to say nothing to the men about this," I muttered, "or they may lose heart."

Queerly the commander looked at me. "They already know," he answered, shrugging his shoulders. "We shall not shirk our duty; we shall fight as long as we live, but when men are dead, they can do no more. The news has been passed on to Impel and to all other defense posts." So saying, he left me and went to inspect the gunners as if there were no hint of danger in the sky.

CHAPTER XXXIII

Disaster!

● Back at my double-eyeglass, I saw that one ship had detached itself from the rest, many shells bursting around it, and was looking for the village that was annoying the fleet. When a shell burst near its underside, its balance was interfered with for a while, but otherwise it was not harmed. Soon it was clear that it must be almost directly over the gunners of the hidden village; their position must now be known to the inmates of the vessel.

Almost stationary, the great ship spoke at last. A big puff of sand and powdered rock spouted up from the ground; so big was the burst as to make the shells of the defenders seem the products of toy guns; then the vessel went on, and now there was no sign of any attack on her; the desert was silent. An enormous cloud of dust, of rock smashed so fine that it remained in the air instead of settling, hid the ground, and when it cleared, I saw a shallow depression, many hundreds of yards wide, where the shot had burst. All at once I felt very sick. I had thought of the women and children now bottled up in their underground homes.

The commander of the post came back to me.

"In all matters," he began, grimly, "affecting the efficiency of this post, I am in command. You have no authority to countermand me in anything that I consider affects the military usefulness of this establishment. Is that so?"

Rather surprised at his tone, I admitted him right.

"Very well then, I consider that your presence here handicaps us in fighting, and I order you to retire at once to a safe distance in your sand-car!"

"But this is absurd—"

"It is not. The presence of a first-class scientist here may cause the men to hesitate to take risks. As a matter of fact," he went on in a more friendly tone, "I have been talking things over with several of my lieutenants, and we are all agreed, in view of what we have seen of the weapons that will be used against us, that the life of a first-class scientist is too valuable to be thrown away—your chauffeur as well, since it is wrong to risk more lives than necessary. These five men will escort you to your car and will use force, if necessary!"

Force! I could have hurled the little fellows aside with ease, but I followed them with dignity. My driver struggled and cursed until I checked him with a sharp word. Had the commander received his instructions from Impel, I wonder? My tutor had been very clear that I must go to Post 536. But whether or not that was the explanation, a lump was in my throat and my eyes swam with tears at the thought of these brave fellows, faced with certain death, who insisted on seeing a perfect stranger to safety, then returned, calm and steady, to duty and to doom. Personally, I had been afraid, but I had made up my mind to meet whatever came, if I could, without showing my fear, when I had been overruled.

Back in the car and hidden under an over-hanging rock well away from the post, I was startled to see that the enemy were now near enough to be visible to the naked eye. As we watched, we saw shells from some desert village burst about them, then one ship detach itself from the main body, as had happened before. This time the explosion was hidden from us, but a minute later a dull boom was carried

to our ears. My companion's fists clenched and his eyes blazed, and I knew that he too was thinking of the trapped women and children.

Bigger and bigger the invading ships loomed, ominous and menacing. The air about us was filled with the deep, thunderous rumble of their engines; the reason for the great consumption of power this spoke of and for their slow progress, by their usual standards, was clear as they showed themselves in greater detail. The undersides of the ships showed a green, metallic sheen that suggested a covering of some queer armor plate. Against this covering the bursting shells, torpedoes would be a better word, made no impression.

● I told myself that it could not be, that no imaginable engines could keep such weights, which must be thousands of tons, in the air for long; yet I had seen shells laden with explosives hundreds of times as violent as any known to earth burst against those protective walls and do no harm. How could the ships carry the fuel necessary to run them? It was possible only if they had the secret of atomic power.*

The left wing of the fleet would pass over Defense Post 536, yet the defenders held their fire. Had the commander decided not to take action, reasoning that his men could do nothing against an enemy so powerful as these appeared to be?—that it would be better to avoid the fate that had overtaken those desert villages who had shown their teeth? Perhaps he was wise, but it was not the action I had expected from him or his men.

Ah! A seering flash of light blazed all around one particular craft! All the gunners in the post had held their fire until the fleet was so near that it was almost impossible to miss, then all concentrated on one target. If these ships were vulnerable at all, that must find them out. The stricken craft shot upwards, fluttering like a leaf in the wind, turned over and over, showed its belly to the sun like a dead fish, righted itself, then glided rapidly, at an obtuse angle, to the ground.

The wreck landed out of sight of my companion and I, but we saw the rest of the fleet scattering, darting wildly to prevent another success for the defenders. Again and again the guns of the defense post spoke together, but they were not allowed another target as easily as the last.

The invaders seemed to be massing at a little distance, to be calming themselves after the fright of seeing one of their number brought down. Then one vessel swept rapidly forward, alone. Suddenly the whole world rocked about me. I thought the overhanging cliff would be shaken from its primordial resting place, or that the solid plain would rise and crush us against it as between the jaws of gigantic nutcrackers. The light was shut out, and all was dark as a starless, moonless night, a solid blackness to crush the soul; then a terrific detonation seemed to occur inside my brain, blasting my head to fragments. Seconds passed before I was capable of normal thought, of saying that that was the sound of an explosion, many more before the ringing in my head stopped and my ears resumed their duties. Miraculously the drums were unharmed.

The black cloud that enveloped us thinned to a dense fog. We could see again, dimly, and I heard my driver asking if I were hurt. Reassuring him, I returned the query, and learned that he had been equally lucky.

We busied ourselves closing the air inlets on the sand-car against the sharp stone-dust that harms the lungs. Well was it that we had sought the shelter of an overhanging ridge, for the many boulders that had come crashing down outside

*NOTE. Though, as a matter of fact, the Larbies soon showed that they had atomic power, the weight of the armored flying-ships was far less than it appeared to be. The armor was very thin, and the reason for its remarkable strength was that it was not made of metal at all, but of diamond. Diamonds are about as much harder than steel as steel is harder than soap, which is why they are used for cutting glass and rocks. The Gorlemites themselves could make large diamonds for drilling out tunnels and for use as tools of all sorts, but the Larbies produced diamond in large sheets for fences, etc.

showed the danger we should have been in had we stayed in the open.

"Heavens!" I gasped, as the settling dust allowed us to see better; "look where we should have been but for the commander!"

There was no need to ask whether any of the defenders of the post were still alive, for where the hill had been that hid them there was now a hollow where everything had been scooped out like mud by a child's spade—deep-lying granite and slate exposed to the light for the first time for millions of years.

Later on more boomings told us that the invading fleet was engaging other defenders. One by one the posts must fall. Into my head came a scrap of a poem I had read in my childhood, tragic in its simple repetition:

"Babylon is fallen, fallen, fallen!
"Fallen is Babylon, that great city!"

Only now Babylon meant Impel.

● I must have murmured it aloud, for my driver replied, "They won't find our underground hiding-places."

So I had thought, once, but the power I had seen had impressed me so that I doubted whether even that difficulty would stop them long.

When the dust was settled enough to make the air outside breathable, we clambered over the rubble that had fallen around our shelter, and went out to have a look about. We found the rocks near us looking much as they had always done; it was always a scene of tumbled confusion with no sign of life, and a native would have been needed to say where it had changed.

We soon found that it was a mistake to walk in the valleys, for here fine clouds of dust rose at one's footsteps and choked one; where to our left I remembered a sheer precipice was now a slope of loose stones, and up this we climbed.

From the summit we saw that the ship that had been brought down by the fire of the heroic soldiers of the defense post was not far from us. Its fore-part had been smashed in by the impact of landing and another ship had landed beside it, dark figures moving about the desert between the two vessels. Two other facts I noticed, both of which were to have important bearings on the future; one was that the desert around the two vessels had somehow become *wetted,* showing darker in the sunlight than the more distant sand and with occasional pools of water, and the other was that the armor of the ships did not completely enclose them, the top sides of the vessels being unprotected.

Across the sun-baked plain we could see more craters where defense posts had been, and a few, a very few, more ships brought down. As we watched, one of these began, hesitatingly, to rear itself aloft again, showing that it had not been damaged beyond repair.

CHAPTER XXXIV

Conference

● It was now late in the afternoon, and I thought it would be best to wait for the night and make our way back to Impel in the darkness; but my driver thought it would be safer to wait until the following night in the hope that the enemy ship would have finished with the wreck by then and gone away. There were supplies enough to last us several days.

That night we slept in our car, under our natural shelter. Towards morning we were awakened by a tremendous noise, like the continuous crashing of thunder, very close. It was coming towards us. We left our shelter and went out to see what it was.

Around the wreck the Larbies were working by the light of queer greenish lamps. I suppose they were taking out everything of value in the hulk, for they later blew up the wreck so that none of the secrets of its machinery and armaments would be found out. As we watched them, they all disappeared into the ships, and the place was still, though the green lamps still glowed. The noise was now louder than ever.

We hunted about for a place from which we could look in the direction of the noise without showing ourselves. Never before had man seen such a spectacle as we then saw through the tumbled peaks.

It was about three miles away from us at first, I suppose, when we first saw it —a single ship, bigger than a dreadnought, about a half mile up, and from it to the ground stretched a continuous ribbon of brilliant orange fire; and where that beam of fire touched the ground, the desert *boiled,* smashed and powdered rocks shooting up to enormous heights. So brilliant was the beam and so terrific its effect that it was not until something hid the light from me for a second or so that I noticed the six guard ships gong in advance of the active one.

Moved by a common impulse, my companion and I threw ourselves down on our faces and covered our ears with our hands to shut out all we could of that awful sound. Even when our eyes were closed the searing light seemed to penetrate to our eyeballs, making a sort of luminous haze. With a scream, my companion jumped to his feet.

"Rays!" he cried, "Radiations! X-rays and ultra-violet! Quick, down the hill and get the mountain between us and the source of them, or we shall go blind!"

Dimly I remembered that ultra-violet rays are harmful to the eyeball, which is the reason why nature has provided that we cannot look directly at the sun, and afraid now more for our eyes than for our lives, we ran openly down the slope.

Within three-fourths of a mile of us, the vessel passed; then the sound died away in the distance and we came cautiously out of our hiding place. A frightful ravine had been torn in the ground, hundreds of yards deep and hundreds of feet wide, the tough granite blown to powder and flung aside in a long line stretching from horizon to horizon.

"Alpha particles," muttered my companion.

The same thought was in my mind. The extreme violence of the continuous ray, and the radiations from the point of contact pointed to the fact that the Larbies were using weapons against us capable of ejecting continuous streams of alpha particles. These particles are the same as those shot forth by certain radio-active substances such as radium. They are extremely small, but their speed is so terrific that an ounce of alpha particles, if an ounce could be obtained, would have more energy than the projectiles in the broadside of a modern battleship. Imagine the power of a continuous stream of them like water from a hose! With these frightful beams, the Larbies were literally carving up the desert. No underground caverns could survive such a probing, for there must be great changes in the deep pressures and strains of the rocks all about the path of these trenches, cracks radiating away in all directions miles down, gigantic faults and slipping of rocks, earthquakes, and if any of the inhabitants should survive, the ultra-violet rays would blind them and X-rays burn off their flesh, for everywhere that the alpha particles went, X-rays sprang into being, radiating in all directions.

"How long will it take them to carve up the whole desert of Impel at that rate?" mused aloud my companion.

"A year," I guessed. "Maybe two, if their power lasts." But in my heart I knew that their power would last.

● We had defied the lightning and we had brought it down on ourselves. Until now, the Larbies had not taken us seriously, not troubled to use their real powers; but now we had begun to annoy them with mass production of weapons and invisible beams for night-time warfare, and this was their reply: "These maggots have become too dangerous," I could imagine them saying, "they must be smoked out."

"Babylon is fallen, fallen, fallen,
"Fallen is Babylon, that great city!"

The death-knell of a race!

All that day we hung about our hill, dug a passage through the rubble to get our car out, and waited for nightfall to

give us a chance to get away, for we had decided not to stay any longer, lest another ship come by and pass nearer than the last, or imprison us altogether. We were already shut off from Impel. There seemed to be no hope of work on the wreck being stopped.

Late in the afternoon came the earthquake—not that it disturbed us much beyond throwing us both suddenly to the ground and giving us a fresh pile of rubble to scoop away, but it filled us with foreboding as to what was to come. In such a 'quake, underground caverns must cave in like empty tins.

That night the sun sank in a blood-red sky, so full was the air of stone-dust that was too finely ground to settle. Around the wrecked ship, dark figures still moved by the light of their green lamps; and in the deep, endless trench cut by the alpha beams shone a dull violet glow telling of radio-active forces not yet appeased; a dim radiance warning us not to go near, for those forces would bring death to any living things, man, beast or vegetable, for many days to come—a barrier of death around the desert. Occasionally we heard a burst of firing, but probably it was merely the beams of the enemy, perhaps when they chanced to strike one of our hidden land-mines. Away in the distance appeared a wavering spot of red that we judged to be a volcano awakened from a sleep of centuries.

There were no stars or moon that night; the world was given over to these unnatural lights, eerily reflected back by clouds of smoke and rolling banks of stone-dust. As soon as the sun was down, we started out, trusting to our invisible beam to show us the way. Never had I imagined I should be so glad of that trivial-seeming application of my subconscious memories! The nearest village to us had been destroyed, but my companion believed that Elboaz had escaped, and accordingly we made for Elboaz.

Finding the way was difficult, for the appearance of the countryside had altered to an unbelievable extent, and our compass behaved wildly under the bombardment of electric and magnetic forces. In spite of the fact that my driver knew the district well, we lost our way several times.

Once on a high plateau by some freak of wind-currents, we had a clear view of the desert of Impel across the ring of death, and we saw that the whole plain was lit up by the weaving, criss-crossing play of search-lights.

Towards dawn we arrived at Elboaz, the chief link between headquarters at Impel and the rest of the nation. All was as usual here, no panic or hysteria, only a steady, orderly fatalism. Relief expeditions had already gone to the two demolished villages in the hope of digging out survivors of the entombed people.

"What is to be done?" I asked the chief, when we compared notes.

"That is for you to say," he responded. "The nation awaits your orders."

"Why this nonsense?"

"Impel rules Gorlem," he explained gravely, "and you, as the only first-class scientist not out of our reach must naturally take command. All the others are imprisoned over there." He waved his hand towards the east, where the capital lay.

Thus explained, I saw how this unexpected responsibility had fallen on me. I was a sort of emergency leader of several millions of people, with a theoretical empire as vast as the United States of America!—and under the same handicap as Alexander the Great suffered from, in having much difficulty in getting into touch with my subjects!

● My first action was to call together a sort of committee for discussing plans, bringing in every person whose knowledge or experience was likely to be helpful. Thirty grim, seasoned warriors formed my first cabinet.

Our outlook was a gloomy one. In view of the earthquakes which were now occurring frequently and with varying force, it was agreed that six months was as long as Impel could expect to hold out, though isolated cells might last longer.

We had no means of striking back at the armored ships of the Larbies, unless we built huge guns many times more powerful than we now possessed.

"I fear," said the chief of Elboaz, "that by the time such a gun was built, it would be too late to save Impel. Further, its power would enable the detector phones to locate it, and then those irresistible alpha rays would be used against it. Now a plan has just occurred to me. A dozen or so experimental flying-vessels have been made, and the parts are here at Elboaz waiting to be put together. We of Gorlem have never used airplanes in war with the Larbies, because we thought them useless against a hidden enemy; but our plan had been to gain experience, and later to build airplanes large enough to attack the enemy stations and the land-dreadnoughts themselves. These planes are small and slow, especially when compared to the ships of the enemy, but I believe that we have in them a means of striking at our foes.

"When the enemy ship was brought down by gunfire from Post 536, several of us were watching through telescopes, and we are all agreed that the armor on that ship was on the underneath only. The top half of the ship was unprotected, probably to save weight. If our planes can rise above them, small as our vessels are, I believe they could do damage."

An outburst of enthusiasm followed his words, and plans were made for carrying the war into the air.

"No!" I exclaimed sharply, silencing them all. "These vessels are a means of surprising the enemy, and to go at once into action with what we have would be to waste that advantage. They are our trump card. First we must set all our people busy building more ships; we must get mechanics and materials from other villages, and we must work until we have a fairly large fleet; then we must find some way of getting into touch with Impel, tell them of our plans and ask them how we can best use our planes to the greatest advantage of Impel and of Gorlem."

So it was agreed. Ten sand-cars were lined with lead to shield the drivers as much as possible from X-rays to attempt the desperate dash across the deadly trenches to Impel. Speed was important, because every day now added to the number of ravines the cars would have to cross, as the Larbies carved up more and more of the land. If the sides of the trenches proved too steep for the caterpillars to climb, explosives were to be used to blast a way out. Across the plain the cars were to move with caution, traveling at night and between searchlight flashes, and keeping as much as possible to sandy ground where they could not be easily seen from the air.

Poor fellows, if ever they got to the ends of their journeys it would be as dying men! The story of that raid is an epic that will never be told. Only one car was seen again, and not one living man. Weeks afterwards a messenger, dying from X-ray burns, was brought before me and gasped out the answer to my message before he died.

"To Kastrove from a Committee of Impel.

"We saw one of your cars proceeding across the desert at a rapid rate collide with a mountain and become a wreck. On examination we found inside it the body of a man who had apparently been dead long before the crash, with your message written in code by his side.

"Congratulations on your escape. Tell the people outside not to despair, for we have a new weapon that may prove effective, but we need time to bring it to the surface and erect it. If you could use your flyers to distract the attention of the enemy while we were doing this, it would help us greatly. The new weapon is a development of one of your ideas. We shall be watching. We are sending twelve cars with this despatch."

That was all. Though we watched, we saw no sign of any of the other twenty-three heroes; but now we had hope once

more. For centuries the warriors had relied on Impel, and now Impel had seemed beaten; but now Impel spoke, and spoke words of cheer!

CHAPTER XXXV

Flying Men of Gorlem

● During the next few weeks, I did little but watch our steadily growing fleet and discuss plans. I had been a pilot, and I thought I should be able to advise in the building of the machines, but as a matter of fact, when it came to the practical details of construction, I found myself unable to give much help. These vessels, made by people with practically no previous experience of flying, were queer-looking affairs with pointed wings and a general shape that I could never look at without thinking of grasshoppers. They had a nasty habit, we were to learn, of turning over sideways if caught by a sudden gust of wind.

How to take the fullest advantage of surprise—that was our problem, and our plans slowly grew as the days flew past. Unless great care were taken, even the small engines of our little planes would register on the detector phones of the enemy, and give warning of our presence; to avoid this, it was decided to tie the planes on the tops of sand-cars and carry them a long distance away by night travel. In darkness, lest the rising vessels be seen from some enemy station that might radio a warning, the fleet would then ascend, slowly as much as the power of the machines would allow. It was one of our minor disadvantages that while we dared not use wireless except with great caution and by means of traveling transmitters, our foes could radio freely.

Carefully we worked out the details of our desperate exploit, giving every point careful attention. At times I grew weary of endless discussion, but I realized that if we were to have a chance of success, it was important that as much thinking as possible should be done beforehand, so as to reduce the chance of unforeseen emergencies arising; a clear-cut plan was essential to decisive action, and hesitation would be fatal. There remained the question of tactics and leadership during the actual battle.

Now here was a new problem. Accustomed to guerilla warfare on the ground, there were few men available who would be capable of giving an ordered cohesion to a mobile force of what would be close to a hundred fighting planes. Fighting in the air was a new idea, and extra knowledge was needed if the fleet were not to split up into units, losing its collective effectiveness in a series of displays of magnificent individual heroism. As it happened, I had had the very experience they needed; I had been a squadron leader in the U.S.A. air-navy in the recent war, so that circumstances conspired to force on me the position of Admiral of Gorlem Fleet, the Gorlem Suicide Fleet. My business was to see that our sacrifice should be of the greatest possible advantage to those below.

Never did an officer command a more willing body of men. As I sat in the seat of my flagship, quite a small vessel, on that cold early morning, and ninety-three other vessels lay around me on the smooth sand, their pilots waiting for me to press the button that would be the signal for all to ascend, and I reflected that of all of us probably not one would ever reach the ground again as a living man, the thought occurred to me that alone of all that number, I was probably the only one with any qualms at the idea, or with any hesitation in starting the fateful venture. At the thought, I decided to press the button, and instantly not to press it. For I was afraid—not for myself, but of the tremendous consequences of my action. But the order had gone forth from my brain, and the white knob sank under my thumb even as I decided to delay the signal. The fateful venture was begun.

Propellers hummed; machines lifted their front wheels and danced, or imitated prancing horses, or ran along on one wheel, or buzzed into the air and dropped back onto the sand.

Indescribable confusion — our experimental ships were awkward to handle, and the pilots were without experience. However, over a half of my fleet got off safely, and by piloting my ship myself and bellowing instructions through a megaphone, I made those who were off get out of the way, and in the end got everybody into the air save two machines that were complete wrecks. A bad start, but it gave me confidence, for already my experience had been useful; I was now no figurehead commander.

● Steadily we climbed, for we must be out of sight from the ground before the first rays of dawn shone across the sky. Before the sun had risen to the world beneath us, we caught its first rays on our wings. In the wonderfully clear, dry, cloudless air we had a remarkable view of the desert, every mountain or hill marked by a long shadow, and a distant blue line was the sea to the north. All that showed of the hatred and destruction that waged below was the uncertain glimmer of the great blue globe at the summit of the granite mountain that was the headquarters of the Larbies in Gorlem. Through a glass, the smaller globes that marked the enemy stations could also be seen, but of our own side, there was no sign, nor would a much closer inspection have revealed them. Such secretly crawling things had free men on Kilsona become—but our business was to alter that . . . .

Our plan was to make for Impel under as little power as possible, in order to avoid attention, going slowly and arriving just after nightfall so as to do our fighting in the dark. Glancing around at my command, I saw that they had mastered their machines, my fleet being spread out so that the most distant were tiny specks. As ordered, they glided most of the way, the vessels being built so that they could go a long way with the power off and yet not lose much height, then starting the propellers to carry them up again. There were few commands, for it was essential that only a small proportion of them should be climbing at any one time. Only four times did I issue orders to the fleet, and each time it was to reduce speed according to plan, for the further we went, the more carefully we proceeded.

Sunset found us still traveling, each plane a little spot of light carefully shielded so that nothing should shine downwards to appear on the most delicate photographic apparatus below. A sea of twinkling lights, we swept steadily on. Cold and glittering in unfamiliar constellations, the stars glared down at us, wonderfully bright. To any watchers below, they must be appearing and disappearing in puzzling fashion. I hoped there were not many amateur astronomers about.

Now we were approaching the outskirts of the Desert of Impel, a faint mist of light far below—on till the pale radiance stretched wide beneath us, and the booming of the blasting alpha beams was carried to our ears, and the dark ovals of the enemy ships could be seen outlined against their own searchlights.

Anxiously now we searched the sky for any solitary vessel stationed like a sentinel above the main fleet, but none such did we see. It seemed that our foes were not expecting attack from the air. The hour was at hand for striking the blow that had been in secret preparation for so long, and against which we hoped that the vigilance of the enemy would be relaxed by months of security.

Our plans were all prepared.

"Number one group will follow me and attack," I radioed, directing my pilot to swoop down to where five of the huge ships lay close together. As we glided down, twenty of my command came silently after.

In the enclosed cabins there was little sense of movement, only the sound of the wind whining in protest at our rapid passage, a lifting sensation in the stomach, and those dark vessels springing upwards. Actually, of course, they were not moving, but it was hard to realize this.

Only eight hundred yards below, and still they gave no sign of having seen us; then one of them stopped playing its beam

below, and flashed a light, like a curious finger, upwards. One of my machines was outlined in the ray as though it had that moment sprung into being.

I gave the order to fire.

● Almost instantly, an inferno of booming explosions and eye-searing flashes of light sprang into being. In the confusion, it was impossible to follow the main course of the battle; there was a general impression of furious medley in which isolated details stamped themselves on my brain. One was of getting my sights lined on the topside of one great hulk, then of realizing that my shot had probably been a waste of ammunition, for it so happened that that particular vessel had been unfortunate to be attacked by seven different planes at once. Explosions so lined it that its upper surface was one blaze of light; the next moment, a dark, empty shell in the rays of its companions, it was falling straight down like a stone. Then we all zoomed up again, because we must keep above the enemy. Another picture is the momentary glare, brighter than the light of day, when one of our torpedoes exploded some great reservoir of power on an enemy vessel about a mile away, shattering it into fragments and bringing several of my fleet down in its doom. Twice I saw one of my command seem to suddenly come into existence as a searchlight caught it, to turn into dust the next instant as an alpha beam leaped after the revealing ray.

Darkness came again, relieved only by a few pencils of light. Of the five vessels of the enemy, only one remained, rising above the battle; and of my twenty-one planes, there was a group of about nine.

I gave orders to dive and scatter, for we were helpless with an enemy above us. As the pilots strove to obey, the ship above smashed them out of existence quicker than a man could count, one, two, three, four, but four only, for my second group of my first squadron, following on, came as a disastrous surprise to this last vessel.

All this while our radios had been emitting a shrill whine to warn our friends on the ground that now was the time to take advantage of our activities, and also to guide the rest of the enemy ships away from them and towards us, so that the scientists could complete their fateful preparations below.

Exactly how many vessels the Larbies had we did not know, but there must have been over two hundred. About half of these formed a narrowing ring around Impel, and thus from the north and south two lines of ships, almost in single file, made towards us. For these the two groups of my second squadron waited in a sort of ambush; those who came from the east, across the desert, we had to deal with ourselves.

Height, height, that was the main thing—gain altitude. The enemy could be hurt only from above, and they could climb faster than we. Ever upwards the battle waged, a sort of storm center where the first fight had taken place, into which center ships hurtled from all directions to be destroyed, bringing down others in their fall. It became more and more difficult to see how the battle was going, a series of mad, individual skirmishes, my planes melting away like snow in a fire. Again and again one ship of the enemy got above the battle and decimated us, but every time that happened some individual flyer would manage to ascend still higher, and a torpedo planted in the unarmored back would send the great hulk plunging down.

All ordered plan was gone. Now things were growing strangely peaceful, and I knew that this was because few of my command remained to fight. Machines near me exploded for no reason at all .... Another pilot, quicker in thought than I, saw why this was, and screamed through his radio a warning to those of us who still survived.

"Viewing-screens! Invisibility!" he yelled.

Leaping to my vision-box, I found uncountable numbers of huge enemy ships

above us. At that I sounded my last command, the final alarm that would bring my very last squadron, the suicide squadron, into action.

CHAPTER XXXVI

Silent Death

● When the plans for this last squadron were made, I had protested that flesh and blood could never stand such strains, but my objections had been gently smiled away. There were twenty-three planes in this squadron, one man in each plane, and they carried no guns, for the way they were to be used there would be no opportunity for firing—and the bodies of the machines were crammed with every explosion-producing device known to Impel.

I was some way off to the east of the main battle when they came, and such was the play of bursting flashes, and of searchlight beams, both visible and invisible, that in my vision screen all was clear as in the brightest day. There were three layers, as it were, the lowest being the remnant of my first two squadrons ducking and wheeling and dodging to the utmost of their skill and the ability of their planes, but yet being destroyed quicker than one could count the annihilating flashes; above them were the huge oval shapes of the enemy ships, picking off my machines below, while they themselves hung gigantic, almost stationary, above the tumult; and above them again were the as yet invisible last squadron, our very last resource.

From so great a height as to be out of sight even from here, a mile above the ground, they came—in a free fall. On the signal from me, they had stopped their propellers, folded up their wings, pointed their noses downwards, and shot at us like whistling arrows. At that pace, it must be almost impossible to direct the plunge; all things visible must surely dissolve into a vague blur.

Like streaks of light, they were, when I saw them — forms indistinguishable, flashes of lightning that darted at those huge vessels and burst into great blossoms of fire where they struck—uncannily vindictive lightning that curved to find its targets. Two of them burst on the sands below; probably because they went so fast that they never saw the enemy at all, and did not know how near the ground they were till they struck and exploded.

But the sky was swept clear of enemy craft. Then I saw something that filled me with wonder and amazement. It was my few remaining vessels, about a dozen of them, grouping themselves together and flying up and eastwards for a final attack!

"Come back!" I screamed into the radio, "save yourselves!" But they heeded not.

Tears of wonder and admiration in my eyes, I turned to my pilot. "Well, wherever they go, we must be there," I said. "Follow them."

"No," he said, firmly, to my amazement.

"What?"

"Before I set out, I had my orders, and they were that so far as possible, my duty was to protect the life of a first-class scientist. Fighting was to be secondary to that. I have kept away from the thick of the struggle all the time, and now I am going to land you at Impel!"

Defense Post 536 again! For a moment, I hesitated about wrenching the controls away from him, but I thought of the other three lives, the pilot himself and the two gunners, which I should be sacrificing as well as my own, and I let them have their way. Let there be at least four survivors of my fleet, I thought. Was there cowardice on my part in this? Looking back I sometimes regret my action, or lack of action, but I am not sure. After all, there was Issa.

Speed that had seemed nothing in the upper air became tremendous when we were close to the ground and watching the sand and rocks stream by. My pilot knew the way and carried me rapidly towards the secret entrance of the under-

ground city that housed Issa and all the friends I had in Impel.

Had our battle lasted long enough to serve our purpose? And if so, would the mysterious new weapon prove effective?

There was a spot of light near the entrance, and a number of dark figures moved about in the faint glow. How tiny a group they were! Presently I could pick out searchlight machines, a whole circle of them, pointed upwards, and viewing machines beside them—but no guns, no weapons of any description. How helpless they looked.

● Soon we were alighting from our plane, and Issa herself ran towards me with a glad cry. Mechanics bestowed on me a brief greeting and went on bustling about, adjusting this, testing that.

"How long before you will have it fixed up?" I asked of my former tutor when I found him.

"What?" he asked, pausing with his face shiny with sweat in spite of the cold air.

"Your new gun."

"Oh, that? There it is." He pointed to an extra-large searchlight and ran off, his face and clothes plastered with soot and grease.

"Do you know what it is?" I asked Issa. "A new ray?"

"Yes," she answered, "ultra-sonics, I think they call it."

The word seemed familiar, yet I could not think what it meant. Happening to glance around a minute later, I nearly screamed aloud, for there was a huge ship of the enemy, clearly visible and not five hundred yards from us! I shouted a warning, to be met with grins of amusement!

My friend came towards me, his face one broad smile of satisfaction.

"Your ultra-sonic ray is a complete success," he announced. "While you have been standing there it has brought down three enemy ships, and in ten minutes more we shall have a second and third projector in position. The beauty of the ray is that nobody can see it in operation, so that the rest of the enemy are not alarmed."

"But that ship there—"

"Everybody aboard it is dead. See, it is settling down. Ah, the operators have sighted another, coming to see what the trouble is. Think you've got it?" he called back.

"Think so," shouted the grimy crew of marksmen. "On the cross-hairs. Heating up now. Yes, it's getting visible and beginning to travel erratically."

"You owe me an explanation," I declared. "What is this ray?"

"Ultra-sonics. Ultra-sound. Sound that cannot be heard. You told us of it yourself."

I goggled at him. We are, of course, all familiar with the idea of ether waves, from radio waves to visible light, down to X-rays and gamma rays, being used for purposes of destruction, but that a mere sound could be equally effective, and an inaudible sound at that, was a new one to me.

"You told us," he went on, beaming, "that sounds are vibrations in the air, but if these vibrations are faster than 40,000 a second, the sound will be on a note too high for the ear to hear."

"Of course."

"Now quartz is very hard, and electric currents can make quartz vibrate very rapidly. Vibrations as fast as 500,000 a second can be produced and projected in a beam.

"Now, if water is subjected to these very rapid vibrations, any living things in the water, except bacteria, are killed, the cells of the body being torn to pieces. That was all you told us, and we were left to apply it.

"In the message you sent us which all your messengers died in delivering, you mentioned that the wrecked ship was surrounded with a mist of vapor as though water had escaped from the wreck and was steaming in the sun. The Larbies are sea-creatures, and, reasoning from your observation, we concluded that the ships were full of water in which these creatures lived like fish in the sea; and all

we had to do was to perfect a machine to project your destructive ultra-sound at them. Armor was no longer any protection."

When the first glow of dawn appeared in the east, a dozen of the death-dealing, innocent-looking machines had been placed in position. It was somehow ghostly to watch their silent destructiveness, like the secret knife of an assassin rather than the hot-blooded open blows of warfare; but, as I told myself, it was a brutal, unprovoked attack that had been made on us; any means are justifiable in defending oneself from cowardly murder. Mankind was fighting for life.

● All that day our men watched and occasionally killed, and all the following week. Then our foes came no more. All on one day they vanished as though they had never been. Not more than half of their vessels had been brought down, from the day of the battle until their final disappearance, but I think that in some dimly conceived headquarters of theirs, perhaps at the bottom of some incredibly deep abyss of the ocean, they must have got wind of our new deadliness and given mysterious orders to retreat. My heroic fleet—there were four survivors only—had wrought the salvation of humanity on Kilsona.

A few of the vessels we brought down landed without being damaged, and the secret of the alpha beams and of the powerful flying engines that could keep such heavy vessels aloft were ours, together with many another secret. With these new weapons it was felt that man need never more fear the Larbies as foes.

It really seemed that the Larbies had shot their final bolt, for never again, so long as I lived on Kilsona, did they make an attack on Impel, and slowly, through the years, the grip of these monsters from the sea on the dried up land of Gorlem relaxed. Station after station, without recruits or supplies, fell into our hands; but it had taken hundreds of years for the Larbies to obtain their former position of virtual rulers of Kilsona, and it must necessarily take centuries to drive them all back into the sea, and always there would be places unsuitable for man that would be left in their hands, such as lands of ice and snow, and fever-stricken marshes. Our present population was too small to occupy more than the land of Gorlem. As we multiplied, so it would be necessary, and possible, to win back more and more of Kilsona.

After I had been ten years on Kilsona, the re-claiming of the desert was well advanced, and much of it was irrigated and cultivated again, as it had been thousands of years before. Years on that world were twice as long as ours, and I was now of an age equal to forty years, a fairly advanced age for a green ape-man of Graypec. In all, as I have said, I spent thirty years on the world of Kilsona, and many things must necessarily happen to a man in thirty years; but after the first four tempestuous ones that ended with the battle that established the independence of Impel, I settled down to a peaceful and fairly comfortable life. Historically, it was a time of the gradual winning-back of the desert of Gorlem, but whether our enemies, the Larbies, accepted the defeat or whether they were merely lying low and planning some fresh attack, I was destined never to know.

That is all I can tell of the curious struggle fought by mankind on that tiny but wonderful world that it was my unwilling lot to live a whole lifetime in, a struggle that lasted for many generations, and of which I had seen as much as well could have been crammed into one lifetime, a struggle that, I sometimes think, is similar to one that may lie in wait for our own descendants, and of which I may have seen the end, but which may yet have gone on and on, century after century. I hope the latter, for it seems that man needs always to be surrounded with danger and difficulty to develop the best that is in him.

That part of my task, then, is done. All I have now to do is to relate the rest of my experiences on Kilsona, or rather to summarize them, since that would take

too long, then to tell how I got back to this civilized world of ours, and of the terribly tragic misadventure that befell me there, and that has almost driven me mad.

CHAPTER XXXVII

The End of it All

One more incident I must take from the war with the Larbies, then I am done with it. It is an incident unimportant in itself but profound in its effect on me, one of my happiest memories of Kilsona.

Cut off from communication with one another, the enemy fighting stations persisted from sheer habit in keeping up some show of resistance, but one by one fell into our hands. In some cases, the slaves themselves sensed the weakness of their masters and threw off the yoke. The biggest of these uprisings occurred in an area of desert where there were no Gorlemite villages left, an area a quarter the size of the United States. Cautiously we got into touch with the leader of this revolt, and he proved to be my own son whom I had lost ten years before when I first saw the Larbies at the caves of Graypec. In ten years on Kilsona, one grew to manhood, and he was a fine, athletic young fellow, brightly intelligent and marked off from his kind by a bold independence of thought that, I like to flatter myself, he inherited from the ape-man father he had forgotten. His resemblance to Issa and to his younger brothers and sisters, as well as a certain scar on his arm, proved his identity beyond doubt. When we began to understand the writing used by the Larbies on the tabs worn by the slaves, we found the sign for Graypec on his tab, as on Issa's and mine, now kept as curios.

Thus, as though by a miracle, my son whom I had mourned as lost was restored to me.

Years passed, in peace. Freed from the necessity of hiding, the Gorlemites began to build up their civilization again, a heavily armed nation in which the scientists, who were obliged by law to live quiet, simple lives, were the real rulers. To describe all those years in detail would be a tremendous task, and I have neither the time nor the energy to do it.

In happiness and content, surrounded by our offspring, the evening of life began to draw near for Issa and myself. With advancing age I began to think more and more of the world I had left so long ago, of paved streets and petrol fumes, of policemen and houses. I who had lived such a full, crowded life on Kilsona was greedy for more life, to return to the other life I had left. This selfishness was the only cloud on my mental horizon.

I confided in my eldest son.

"But you are getting old, father," he said. "Forget about this other world of yours. Even if you could get back to it, it would not be worth your while to go. End your days among those who love you."

I had the greatest respect for his keen young brain, for my own was getting dull with the years. No longer could I remember clearly what happened yesterday; my sharpest memories all centered around Graypec and my first visit to Gorlem, and around Charlie, my brother, who sent me here. Years here were less than seconds back at home, I knew, but the idea seemed to be too fantastic to be true. Could I resume that other life, the life of Learoy Spofforth, as I had left it so long ago? And if I did, should I become a young man again, or should I be a monstrosity, an old man in a young man's body? I know now that the mind never grows old, that the body merely becomes an increasingly feeble servant to it, but the problem seemed a terrible one to me then, tortured with doubts in that strange world.

Then Issa died. She reached the end of her normal span of years and passed on. I should have done the same, but my body, my splendid savage body that had fought with and slain the bully, Grawtok, and had hunted the bounding ollideps, had still considerable reserves of strength, though the guiding brain was weak. But now I was alone. My friends were dead, my children were all occupied with their

own families, and my time hung heavily on my hands. More and more I thought of home.

At the same time, I was an object of honor to the public of Gorlem, who knew how I had helped in throwing off the hated yoke and perhaps did not realize quite how much I had been the instrument of circumstances.

● So the old man brooded. I was tired of Gorlem, tired of sand and rocks and irrigating systems and fortifications, of blazing suns and burning days and icy nights. At last came the day when I clearly knew what I wanted; it was to go back to Earth, to the world of Learoy Spofforth and Charles, his brother, and Mary, his wife—to go back, even though I did so as an old man, crippled with rheumatism and dim of sight and hearing. I could not see how selfish this was.

My plans were made, and I used every atom of influence I possessed to have them carried out. It was hard, because a new generation had arisen, quite willing to revere my memory as a hero of the past, but not so ready to help the still living man; but in the end, I got my way.

And that way must have seemed to them mad enough! In a carefully selected stretch of desert, free from drifting sand and where plants would grow if they had water, I made my headquarters. Here I sank wells and arranged that they should irrigate irregular stretches of ground forming the letters, hundreds of yards long, "L S" and an arrow, then another arrow and "L S" again, with both arrows pointing to my house in the center. Within a month, airplanes high above could see the green letters and the arrows, both indicating my house.

The house itself I seriously considered building in one story with a roof of glass, but gave up that idea because of the heat, compromising by keeping out of doors as much as possible. Then I had a number of hats made for me with flat white tops showing the letters "L S" in black.

"There, Charlie," I said, looking straight up into the sky, "I've shown you where I am as plainly as I can. Now take me back—if your magic is strong enough for that."

Over two years I lived there alone, waiting and hoping. Alone, that is, save for parties of sightseers who visited me.

"Growing rather eccentric now, you notice. Spends his time dreaming." But the fact was that, now my senses were weaker, all Kilsona and its people seemed unreal. Often I dreamed that I was actually back at home, awaking to my real surroundings with a sense of bitter disappointment. But I never lost hope. Could Charlie's thoughts reach me even here in a telepathic message in which nothing remained but a promise of help? For now I felt I was in touch with him, that his cheery optimism could somehow reach me, buoy me up.

The actual moment when Charlie found me I can no more remember than one can recall the point where a dream ended and one sank into deeper sleep. There came a time when I felt myself, as it were, drowning in some fourth-dimensional mist that could neither be seen nor felt nor heard. I had a sense of being wrenched out of myself, of losing touch with my senses, of a freedom that was akin to death. I had a transitory illusion that the mystery of what comes after death was revealed to me, an intangible knowledge that was to vanish like a dream. Then I felt myself in the grip of an awful force, squeezing me to an extremely minute size, my adaptation to an altered time-sense.

Something seized me in a powerful grip; a blanket of unconsciousness was thrown over the turmoil of my mind.

There followed dreams in which I chased unformed shapes through unthinkable abysses of space, then others in which I myself was being pursued, until the mists slowly cleared, and my consciousness pushed aside these phantoms. Wondering, I began to piece together the fragments of my disrupted personality.

Once again I was Learoy Spofforth; that I knew with a certainty that needed

no explanations. There was a gentle warmth in my limbs, and my head ached as though from a blow.

● I opened my eyes. I was in Charlie's familiar laboratory.

From object to object my eyes wandered, taking in the old, familiar things and remembering them again. A chair, a table, a rack of odd-shaped glass vessels, and Charlie's super-microscope that used up so much high-tension electric current —and Charlie himself, an empty glass in his hand, watching me anxiously. There was a lingering taste of whisky in my mouth. None of these things, not even Charlie himself, had changed a jot since I left them so very long ago; only I was changed, changed by the passage of a length of time equal to sixty normal years, a young man become old in a flash.

"Hello, Charlie!" I said, smiling foolishly.

Upon which Charlie exclaimed, "Thank God!" fervently.

I tried to stagger to my aged, feeble feet, when my legs responded joyously, vigorously, like the Learoy Spofforth of old. I was young again! Thirty double years had passed in the twinkling of an eye, had completely fallen from me as though they had never been! I took several steps for sheer joy in the springy litheness of my body.

"I had some doubt whether I had succeeded in getting you back; I was even not quite sure whether I had got hold of the right ape-man; and if I had erred it was too late to alter things again. All's well that ends well. You were away only a few minutes, but I suppose it seems longer to you?"

Passing a hand over my brow, for my brain was reeling, I answered hoarsely, "Charlie, I spent a whole lifetime on that tiny world!" A shudder passed through me.

He then told me what had happened in the laboratory while I had been away, how he had realized his mistake on meeting the unfamiliar gaze of the ape-man staring out of my eyes, how the savage had struck at him, how he had knocked the monstrosity unconscious and set to work to find me again. "I had to be quick," he said. All the while he eyed me shrewdly, alertly.

I found myself gazing in horrified fascination at the top of Charlie's head, where he was partly bald. I imagined myself swinging some heavy weight and bringing it down with crushing force on that pink, clean space between his forehead and where the hair started halfway back on his head. Alarmed and horrified, I tried to throw off this horrible thought.

Across the ages a voice seemed speaking to me. It was the voice of Issa, mate of Kastrove the cave-man, and she was repeating the words she had said to him in that cave so long ago in the evening of the day when the pair first met.

"Transferred personality?" she murmured in her low voice, wonderingly. "Men could transfer personality long ago, but the process was never really successful, and attempts to reverse it usually resulted in there being two mentalities warring for possession in each brain."

Had Charlie merely succeeded in producing the same result? As I sat, a mist came over my eyes, and I was gazing again at the scene before the caves of Graypec, the space with the smouldering fires, the rippling stream, the woods stirring in the breeze; and Charlie before me was one of the hated creatures I had sworn to fight and destroy as long as life remained in my body.

With this hideous obsession I struggled . . . .

"Charlie," I said, trying to warn him, "be careful—"

Then I hardly know what happened. My conscious self was brushed aside by the uprising of that other, primitive, bestial mind. In dim horror I knew I had picked up something heavy, was springing, swinging my weapon. Then comes a blank period in my memory.

I came around to find myself struggling with several men. There was Charlie's butler, a gardener, a policeman, and a stranger, and they were dragging me

along the corridor. All four were panting heavily, and my arms and legs were bruised and cut where I had fought them with animal fury; but worse than this was a sense of overwhelming catastrophe, as of some sacred trust I had betrayed by failing to control myself. What had I done?

"Kill your own brother, would you?" I heard one of them mutter. Who it was, I do not know, except that it was not the butler.

In one stupefying flash, all was revealed to me; my crazy leap, the heavy weapon, (a pair of brass scales, I believe) the blood on my hands. I had killed Charlie—Charlie, my brother!

At the overwhelming shock, I think I went for a time quite mad, fought with teeth, nails, and shoes, screamed and bellowed. I had been through enough to drive any man insane, and now this terrible knowledge came to finish everything.

Days followed in which I was so full of sorrow and remorse that I took no notice of anything around me, saw nothing, heard nothing. They are days that have fallen out of my mind without leaving a trace—a gap, a hole in my memory. I think there were times when that apelike personality controlled me again . . . .

Lucidity came gradually. I had killed my brother, and of course I would be charged with murder. At first I did not care, but later I decided to set down the whole story of my misadventures, more to straighten out the awful tangle in my own mind than for any other purpose. Writing it all has made things a little clearer.

Such is my story. It has been, I realize now, a very long story to lead up to an incident that, in itself, took a very little time in telling. Let you, my judges, make of it what you will.

One point I want to make quite definite. It is that I had no conscious knowledge of striking the blow that killed my brother; that, in fact, if it were not for what I heard afterwards, I should not even have known that he was dead. Believe this or not.

Writing this has taken me many weeks, and several times I put the task aside, weary, only to take it up again. One thing I have learned since I began, and that is that I am not in prison awaiting trial for murder. I am in a private lunatic asylum. It is a mad world that refuses to take a man's life when he has destroyed one he loves and wishes to be freed from the torturing memory.

Adversity sometimes brings friends. In the peculiar but sensible routine of this asylum I am made to take long country walks every day in the company of two men and a woman. One of these men in some ways resembles my dead brother, and the woman is very like my uncertain recollection of Mary, my wife. These people try hard to make me happy, and would succeed if I had any interest left in life.

But they waste their time and sympathy on Learoy Spofforth.

Epilogue

The closely written sheets varied in style of the writing, being neat and well-formed at the beginning but becoming steadily more difficult to read towards the end. The youngish woman who read them was strong and handsome rather than beautiful. She stared a long while at the last sheet, which bore the signature, before she roused herself, turned it over to make sure there was nothing more, then placed it face downwards on top of the pile on the table.

"Finished your husband's manuscript, Mrs. Spofforth?" gently enquired the middle-aged man in the armchair.

Barely audible, she breathed, "Yes," after a long wait.

Very difficult to know what to say to her, he thought.

"I thought it best to let you read it, to let you know everything," he tried at last, feeling that that, at least, was safe.

She sat up, took her elbows off the table. "You were certainly right," she

whispered and became motionless once more.

It *was* difficult to know what to say to her, he decided. For all that, he recognized that she was behaving splendidly. The catastrophe that had wrecked her home-life had been due to him, if it was not actually his fault, and now he knew she gave no sign. He had feared there would be screams, hysterical abuse.

"There is something you do not know," she said, softly. "Two years ago Learoy got a nasty knock on the head from a golf ball. Doctors were very mysterious about it, and I have been secretly anxious ever since lest it should affect his brain. He began to do queer, unexpected things. I was prepared for some slight mental malady, but this, this—" her voice trembled at last, "is so complete. This long fantastic story, this romance of Kastrove and Issa. That poor boy should invent it all out of nothing. Phantoms, phantoms!" Tears flowed silently down her cheeks.

He almost smiled. "Come, Mary, you are making things out to be much worse than they actually are. You think Learoy's whole story, from the first word to the last, is delusion. It's not so bad as that. If we examine this document carefully, we shall find that some of it is definitely true, most of it is possible, though strange, and only a very little can be set down as definite delusion."

She looked her enquiry, afraid to speak.

"In the first place, the super-microscope and personality transfer machine actually exist in the laboratory. Furthermore, that reckless experiment was actually made, though such a mad proceeding will probably never be attempted again. Let that particular invention of mine be forgotten; I see now that it can cause nothing but evil. But undoubtedly it worked, and Learoy certainly did spend some time, which would seem to him years, in the form of an uncivilized savage on the world he calls Kilsona, in an atom."

"Not so fast," she interrupted. "I am getting confused. You say that Learoy is not nearly as mad as he seems to be, that in fact we are to accept his whole story as true, up to the point where he came back to earth?"

"Up to a point, yes, but not that particular point. If we examine the matter carefully we find that, now that he knows he is not in prison, and apart from the fact that he fails to recognize us, which he is now beginning to do, there is only one point on which he is definitely deluded."

"His idea that he killed you?"

"Whereas I am alive and well!" Happy now, Charles Spofforth went on with his explanation. "Why should my brother think that? All he actually did was to give me a nice bump over the left ear with the base of an expensive little microscope which broke in his hands. Why should he think that should have fatal results?

"On reading his own confession, as he calls it, we see why. It was simply because, the moment Learoy came around, that fool, Hopkins the gardener, told him he had killed me. In a highly impressionable, unstable state, my brother heard those words, and his brain seized on them, forming an obsession so strong that until now we have not been able to remove it. But we will—"

She was not looking at him; she was gazing, broodingly, out of the window.

"Why, of course," she exclaimed suddenly, thumping the arm of the chair and beaming happily. "I knew there was some way."

"To remove Lea's delusion?"

"No. Parts of the story are painful to me, those about the woman, Issa. I knew there was some reason why I should not be jealous and now I have it. Don't you see, Learoy was *not* unfaithful to me. It's Learoy's body that is mine, and the body that mated with that woman was not his at all, but that of Kastrove the ape-man."

● Women, reflected Charlie, were much more outspoken than men. He tried to imagine himself explaining that to her,

blushing and stammering in spite of his thirty-four years. But he saw her point.

"You are right," he agreed.

Rising, he walked to the window and looked out across the estate where acorns and chestnut-burrs were falling, and a pair of white swans led a scattered group of gray cygnets across the lake.

"Our walks are doing him good," he observed. "The doctor can see signs of improvement. He is beginning to know us again."

Quickly she jumped to her feet and ran to stand beside him, looking out.

"Together we will bring him around," she declared.

THE END

ONE HUNDRED GENERATIONS

By Philip Jacques Bartel

(Continued from page 451)

screams, until nothing but a mass of quivering flesh and feathers lay before him!

Dully, he closed the door behind him and faced the bewildered guard whose hand was stretched out for his weapon. He gave it to him and slowly made his way to the council-room followed by the perplexed sentry.

As he entered, some other speaker was voicing his ideas against intermingling with the Marconians. Who it was, Jay never discovered. He didn't care.

Insensible to the congregation's stares, he glided to the center of the hall, directly in front of Smith-Ray, and raised his arm in a prayer for attention.

Frowning at this uncalled-for interruption, the aged Governor nodded his permission.

Jay summoned the last of his fast waning strength. "Great Leader," he rasped, "I hope I am in time to avert a horrible mistake!"

Never before had anyone had the audacity to disrupt the strict ritual.

"What has happened, my son," he cried; "compose yourself!"

Jay gripped the handle-bars of his carriage until his knuckles turned blue. He related what he had seen on opening Lyth's door.

"—And there was the glorious Lyth and the loyal Banta, gorging themselves, in the manner of true vultures—real eaters of carrion—on the poor, dead flesh of their friend and Master, the beloved Di Marco!—like beasts, I tell you, like beasts of prey!"

His voice grew into an hysterical shriek. "—And when I begged an explanation of this vile conduct, she replied:

"*'Fool, you gave us pills to eat; we need meat!'*"

As his last bit of strength left him, he fell forward in a dead faint!

● It was weeks before Jay was permitted to have visitors. Deadly quiet, his eyes staring straight before him unseeingly, he lay in his square cot, suspended on its spring from the ceiling of his room.

Of all his friends and associates, he was hungry for the presence of but one person—Smith-Elsa, his wife.

Many times, while his body trembled under the soothing health-rays of the Medical-Bureau, he had sensed her presence. When the nightmares of the past had disappeared, they were finally replaced by pleasant, sweet dreams of *her.*

A foreign sound came to his ears—the soft buzz of the visitor annunciator. He raised his tired head and glanced at the screen.

The familiar, welcome shining baldness of Elsa beamed out at him. He signalled permission for her entrance and eagerly awaited her arrival.

The door slid open and, with a heavenly grace, not the diabolic rhythm of *she* who had gone—his wife glided to his side. Softly she bent over and kissed his feverish head.

"Jay," she murmured soothingly, "we will only look ahead to a glowing future."

He nodded his complete agreement.

A smile lit up her pleasant face and she lightly patted his hand.

"I told you I had something important to say," she remarked quietly.

He raised his eyes in a mute question. Speech was impossible.

"Yes," she went on lightly, "while you were away, I *did* work steadily and in an entirely different direction."

Intuitively, he knew what she was about to say.

"Jay," she smiled through her tears, "I am certain that I've discovered a true method to restore Man's vigorous form forever!

"*Together* we will labor to perfect it!"

THE END

THE SPACE LENS

By Millard Verne Gordon

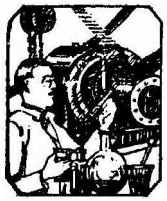
(Continued from page 457)

and all that passed along it was warped and bent, due no doubt to unknown fourth dimensional cosmic forces. Well, this region we know to be somewhat elliptical in shape. We also know it to be directly in a line between the Earth and this planet. What must have happened is this: the ether warp region acted as a gigantic space-lens. All the light and gravitational waves from the Earth were bent in passing through that lens; were in short, bent, exactly as light is bent passing through a glass lens—so that it finally came to a focus where the original image was reproduced. Now if there had been no actual body here to act as a screen, we would have been none the wiser. But due to the fact that a gravitational pull was reflected also, this smooth metal sphere was attracted and held here at the point of focus. The result is that we have here a vision of the earth down to the last tiny detail. But that is all that it is—merely an image. And as light takes three thousand or so years to reach this particular point, why, the scene reproduced is that of the Roman era. We are undoubtedly witnessing a battle that was fought out thousands of years ago!"

The men listened with astonishment on their faces. Then they changed to startled looks of belief. A space-lens!—and the image of the earth. Their own home world!—so near and yet so far!

"Well, I'll be hanged! If this don't beat anything yet," murmured one, and the others could do nought but agree with him.

THE END



Science Questions and Answers

THIS department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited, we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical, also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

THE ASSOCIATE SCIENCE EDITORS OF WONDER STORIES

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Cosmic Rays and Space-Ships

Editor, SCIENCE QUESTIONS AND ANSWERS:

There are a few questions that I would like to have answered.

1. What are cosmic rays?
2. What is their effect on matter?
3. What would happen to a space-ship and its crew because of the rays?
4. What is the power that would most likely be employed in an outer-space craft?

Please answer the above questions at your convenience.

GEORGE PERKINS,
Muskegon, Mich.

(1. Cosmic rays are the vibrations discovered by the scientist Millikan, which are the conglomeration of light from all the stars of space.

2. Cosmic rays can penetrate several feet of lead. A concentration of these rays might produce, like X-rays, severe burns—and in sufficient quantity, death. The atmosphere absorbs a lot of these rays and protects us from them. All of this is not really established fact, however, and some scientists even doubt the existence of them. Their discovery was only made because a certain phenomenon in one of Millikan's experiments could not be explained except that there was a previously unknown ray in the atmosphere coming from space. It is also thought to be corpuscular.

3. We do not know what would happen to a space-ship and its crew in space due to the cosmic rays until it is actually done. If the theories concerning the cosmic rays are correct, the space-travellers would most likely have a very miserable trip at best.

4. The logical power that would be used to propel space-ships would be the much-talked-about atomic power, which has not yet been discovered. Atomic power is supposed to give you a lot of work with an extremely small amount of fuel—a teaspoonful of water would run an ocean liner across the Atlantic and back. The only trouble with rocket fuel is that enough of it cannot be carried. At its best concentration, it is too bulky.—EDITOR.)

The Hottest Temperature

Editor, SCIENCE QUESTIONS AND ANSWERS:

There has been a question in my mind for some time and seeing how well you answer questions pertaining to scientific subjects, I am asking you:

1. Has there ever been a temperature set as the highest attainable?
2. This is my theory on the subject and I would like you to tell me whether my train of reasoning is faulty or not. Minus 273 degrees Centigrade is theoretically the lowest temperature attainable and at that temperature all molecular motion is supposed to cease. Now, according to present theories, the speed of light is the fastest. Suppose we could take some material, say hydrogen, and heat it, which would cause the molecules of hydrogen to increase their velocities, and supposing that we could heat the hydrogen until the velocities of its molecules approached or equaled that of light, would not the temperature of hydrogen at this time be the highest attainable?

GEORGE HARMAN,
Chicago, Ill.

(We have not heard of a maximum possible temperature being set, but extremely high records are attained by the suns of space. Our own sun is supposed to have a surface temperature of some 7,000 degrees Fahrenheit, which is really quite cool in comparison to the heat of some other stars, for our

sun is not at its height. The white suns are the hottest, and the red ones the coolest, if you want to call it cool. We would get a taste of the sun's heat if it ever flared into a nova, which has been considered possible—although no books would be written about it later.

If absolute zero is matter at a complete standstill, as it is, then the highest possible temperature would logically be that at which the molecules were whirling at the speed of light, as you surmise, although no one can tell what that temperature would be. It is likely that they would disrupt themselves before this speed was reached.—EDITOR.)

The Conservation of Energy

Editor, SCIENCE QUESTIONS AND ANSWERS:

The law of conservation of energy says that energy cannot be destroyed but can be transformed. Now, here is a problem that has been bothering me for a long time. If I took a coil-spring and compressed it, then tied it with some acid-resisting cord so it would stay compressed and then placed it in a strong acid to be destroyed, what would happen to the energy that was put into the spring by compressing it? Would I not be destroying energy by this method?

E. GUANELLA,
Santa Rosa, Calif.

(You would not be repealing the law of conservation of energy by the experiment you outline in your letter. What happens to the energy you put into a violent swing when the umpire shouts, "Strike one!"? It passes off into the air. In the same manner, the energy put into compressing the spring passes off into the acid, though you imprison the energy in the spring for a while by tieing it. Energy applied in a vacuum produces recoil. Recoil in the atmosphere is not as strong as in the vacuum, however, because some of this energy passes off into the air.—EDITOR.)

"Mock Suns"

Editor, SCIENCE QUESTIONS AND ANSWERS:

Yesterday evening between six and seven p. m., I saw a big halo or rainbow around the sun, and at intervals around the rainbow were "mock suns," like the sun with a wing of flame on each side.

This lasted about an hour, and I should much like to know the cause of this phenomenon.

AIDAN ST. J. BOYACK,
Essex, England.

(The day you mention was overcast, evidently, though without opaque clouds. You will see the "halo" around the sun on days like this, and around the moon at night. It usually precedes rainy weather. In this country, the "ring around the moon" means rain the next day, although this is not a very accurate means of prediction.

The ring around the sun and the "mock suns" are undoubtedly the refractions of the sun in the mist of the overcast. At times, through a thin cloud, you can look directly at the sun without straining your eyes, and actually see it as a round ball, as you do through smoked glasses during an eclipse, instead of a blob of yellow.—EDITOR.)

Aeon and Solar

Editor, SCIENCE QUESTIONS AND ANSWERS:

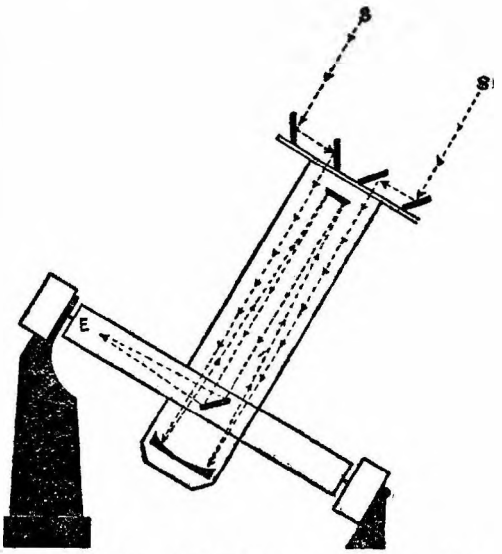
What is an aeon?

What is the meaning of Solar?

A. MARSH,
London, England.

(An aeon, or eon, is a length of time. This term is used to express an incalculably long period, perhaps a million years, a trillion, or all eternity. There is no definite length to an aeon, any more than there is to the word "far."

The word Solar refers to Sol, our own sun. Everything that depends upon the sun is included in the Solar System—planets, asteroids, etc. A Solar eclipse is an eclipse of the sun. Solar tides are caused by the sun. Sun-spots are Solar phenomena. We often refer to other stars possibly having solar systems of their own, and we put solar with a small "s" in this case to give it a general meaning instead of making it a proper name. When referring to our sun, Solar should always be spelt with a capital "S."



In the above illustration, we see an example of Hale's interferometer. S8 are the rays from the star being observed, which are reflected by mirrors 1 and 4 to those marked 2 and 3. These in turn throw the rays to the concave mirror at the foot of the instrument, numbered 5. Next the light is sent to the convex reflector (6), and thus to 7, the little mirror opposite the eyepiece (E) where they are viewed.

Of course, if Arcturus had some planets, the correct termage would be the "Arcturian System" instead of Solar system.—EDITOR.)

The Interferometer

Editor, SCIENCE QUESTIONS AND ANSWERS:

I have read for years about how large the mighty suns of space are and how far away from the earth or our sun. What I would like to know is, how can the astronomers be sure of themselves when they cannot measure them with a yard-stick, like they can the earth? Why couldn't a star be much closer and smaller than they think, or further and larger?

RICHARD NORTH,
Harrisburg, Pa.

(A scientist named Albert A. Michelson invented the interferometer a long time ago. This is the instrument that is used to determine the distance and size of the stars. You will find an illustration of the instrument on this page.

Anyone can make a simple interferometer by following this procedure: make a narrow slit, hardly perceptible, in a sheet of black paper and place it before an electric light with a color filter. Look at this slit through a telescope that magnifies about forty to fifty times. Over the object glass of the instrument place an opaque cap with two holes, about one-eighth inch in diameter, on equal distances from the center on the horizontal plane. The light coming through the slit in the distant sheet of paper will be visible through these two holes, but will gradually disappear when the holes are moved further from the center. When the light is no longer visible through these holes, measure the distance between them and divide this by the wave-length of light, say 1-50,000th of an inch, and you have the angular width of the slit. Knowing the distance of the slit, its linear width can be calculated. The same principle is used to measure the size of stars.

The distance of a star can be computed by its parallax — the apparent displacement due to the movements of the observer, the earth. Through the interferometer, for instance, Betelgeuse appears to be a ball one-inch in diameter at a distance of seventy miles, and from that information, it is relatively simple to figure out the distance, once the size is determined.—EDITOR.)

The SCIENCE FICTION LEAGUE

—a department conducted for members of the international SCIENCE FICTION LEAGUE in the interest of science-fiction and its promotion. We urge members to contribute any items of interest that they believe will be of value to the organization.

EXECUTIVE DIRECTORS:

FORREST J. ACKERMAN
EANDO BINDER
JACK DARROW
EDMOND HAMILTON
DAVID H. KELLER, M. D.
P. SCHUYLER MILLER
CLARK ASHTON SMITH
R. F. STARZL
HUGO GERNSBACK, *Executive Secretary*
CHARLES D. HORNIG, *Assistant Secretary*

OUR enrolment is almost one thousand members, as this issue goes to press, in all parts of the world. There are twenty-four organized Chapters and dozens of others in the making. An application blank will be found in another part of the magazine.

Member number one thousand, who should be enrolled within the next two weeks (before this magazine appears on sale) is to receive a full line of SCIENCE FICTION LEAGUE essentials and a year's subscription to WONDER STORIES as free gifts. After this, every member whose membership number falls on the even hundred mark will receive a free subscription.

THREE MEMBERS EXPELLED

It grieves us to announce that we have found the first disloyalty in our organization. We have discovered that three of our members, who run what they consider a competing club to the SFL, have done all within their power, through personal letters and published notices, to disrepute the LEAGUE, WONDER STORIES, and the Gernsback outfit by spreading gross untruths and libelous slander to other science-fiction fans and authors. They joined the LEAGUE only to be able to attack it better. We are extremely sorry that we cannot know every fan's intentions when applications are received, but we have proved only three-tenths of one per cent wrong in our enrolment, so we hope that the other members will forgive us. These members we expelled on June 12th. Their names are Donald A. Wollheim, John B. Michel, and William S. Sykora—three active fans who just got themselves onto the wrong road.

THE NEWARK CHAPTER

This is to announce that on May 27, 1935, the NEWARK SCIENCE FICTION LEAGUE, Chapter Number Twenty-One, was formed and organized by Robert Bahr, the Director, and given Charter. Charter members include the following (member number follows name): Charles Purcell (909), Sam Moskowit (910), and Robert Bahr (908).

Members in Newark and other parts of Essex county within meeting distance are invited to join this Chapter. Write to Robert Bahr, Director, NEWARK SCIENCE FICTION LEAGUE, 94 Nineteenth Ave., Newark, N. J.

THE NUNEATON CHAPTER

This is to announce that on June 7, 1935, the NUNEATON SCIENCE FICTION LEAGUE, Chapter Number Twenty-Two, was formed and organized by Maurice K. Hanson, the Director, and given Charter. Charter members include the following (member number follows name): Dennis A. Jacques (737), J. E. Barnes (926), M. Crowley (927), P. O. Buckafield (928), and Maurice K. Hanson (738).

Warwickshire and Leicestershire members of the LEAGUE can join this Chapter and attend meetings by addressing Maurice K. Hanson, Director, NUNEATON SCIENCE FICTION LEAGUE, c/o Mrs. Brice, Main Rd., Narborough, Leicestershire, England.

THE EAST NEW YORK CHAPTER

This is to announce that on June 10, 1935, the EAST NEW YORK SCIENCE FICTION LEAGUE, Chapter Number Twenty-Three, was formed and organized by Harold W. Kirshenblit, the Director, and given Charter. This is also known as Subsidiary Chapter Number 1A to the BROOKLYN SCIENCE FICTION LEAGUE. Charter members include the following (member number follows name): Morris Davis (405), Louis Heynick (406), Abraham Shanes (449), Bernard Weldt (931), Israel Brodsky (932), Milton N. White (983), and Harold W. Kirshenblit (642).

Our members in the East New York section of Brooklyn can become part of this new Chapter by writing to the Director, Harold W. Kirshenblit, EAST NEW YORK SCIENCE FICTION LEAGUE, 928 New Lots Ave., Brooklyn, N. Y. This Chapter was organized for the convenience of Brooklyn members who live too far from the BROOKLYN SFL headquarters to attend regular meetings.

THE STAMFORD CHAPTER

This is to announce that on June 24, 1935, the STAMFORD SCIENCE FICTION LEAGUE, Chapter Number Twenty-Four, was formed and organized by Robert W. Lowndes, the Director, and given Charter. Charter members include the following (member number follows name): Raymond M. Hood, Jr. (900), William R. Thurston (925), and Robert W. Lowndes (630).

Anyone in the organization residing in Fairfield county may join this local branch by sending notice to Robert W. Lowndes, Director, STAMFORD SCIENCE FICTION LEAGUE, Box 182, Darien, Conn.

OTHER CHAPTERS

There are organized Chapters of the LEAGUE with regular meetings in the following cities. Addresses will be furnished by Headquarters upon request.

Brooklyn, N. Y.; Lewiston, Ida.; Erie, Pa.; Los Angeles, Calif.; Monticello, N. Y.; Mayfield, Pa.; Lebanon, Pa.; Jersey City, N. J.; Lincoln, Neb.; New York, N. Y.; Philadelphia, Pa.; Oakland, Calif.; Elizabeth, N. J.; Chicago, Ill.; Tacoma, Wash.; Austin, Tex.; Leeds, England; Millheim, Pa.; Bloomington, Ill.; and Belfast, Ireland.

PROPOSED CHAPTERS

Every member of the LEAGUE who possibly can should belong to some Chapter—one of those listed in the above paragraphs, or in the list to follow. If there is not a Chapter located near you, you can start one yourself. Simply write in to Headquarters and we will send you complete information. To join one of the Chapters mentioned here, just ask us for the complete address of the one you are interested in and we will put you in touch with the local Director. We have active members in the following cities who would like to organize Chapters:

Akron, O.; Bacolod, P. I.; Bakersfield, Calif.; Baltimore, Md.; Belleville, N. J.; Belmont, Mass.; Bessemer, Ala.; Boston, Mass.; Bronx, N. Y.; Buffalo, N. Y.; Caldwell, Ida.; Cape Town, South Africa; Christchurch, New Zealand; Clarion, Ia.; Danville, Va.; Denver, Colo.; Des Moines, Ia.; East Orange, N. J.; E. St. Louis, Ill.; Elmira, N. Y.; Far Rockaway, N. Y.; Flint, Mich.; Hammond, Ind.; Honolulu, T. H.; Houston, Tex.; Hull, England; Indianapolis, Ind.; Johnson City, Tenn.; Johnstown, Pa.; Kenmore, N. Y.; Lakeport, Calif.; Lawrence, Kan.; Liverpool, England; London, England; Lovell, Wyo.; Mancelona, Mich.; Mercedes, Tex.; Milwaukee, Wis.; Minneapolis, Minn.; Moline, Ill.; Oklahoma City, Okla.; Quincy, Mass.; Rockdale, Tex.; Sacramento, Calif.; St. Louis, Mo.; San Diego, Calif.; San Francisco, Calif.; Seattle, Wash.; Shanghai, China; Southall, England; Springfield, Mo.; Staten Island, N. Y.; Sydney, Australia; Warren, Wyo.; Washington, D. C.; Wichita, Kan.; Winfield, Kan.; and Yonkers, N. Y.

CORRESPONDENCE

All members are free to use this column with a limit of six insertions per year per member. Members are warned against questionable mail that their insertions may bring in from outsiders.

Harold Ewen, 45 E. Mosholu Parkway N., Bronx, N. Y.—members of all ages, both sexes, interested in science-fiction, socialism, science, and U. S. stamps.

C. Albert Dahlke, Jr., Apopka, Fla.—boys and girls between the ages of 15 and 18, especially those interested in chemistry, radio, and stamps.

Jim Blish, 4750 Kenwood Ave., Chicago, Ill.—members of any age, sex, or locality who are interested in protozoology or astronautics (space-travel).

Raymond A. Cass, 7 Hinderwell St., Hull, Yorkshire, England—members in the U. S. A. between the ages of 14 and 16 interested in space- and time-travel.

Arthur R. Hermann, 842 W. 64th St., Chicago, Ill.—members twenty-one years of age and over interested in psychology and anything else anyone wants to suggest. Location unlimited. Will be glad to exchange ideas, photos, etc.

D. A. Jacques, 89 Long Shoot, Nuneaton, Warwicks. England—other male and female science-fiction fans anywhere in the United States.

THE SECOND SCIENCE FICTION TEST

To date, well over two dozen entries have been received in the Second Science Fiction Test published in our July, 1935 number. Considering the fact that the First Test appeared just last January, this turnout cannot be considered poor. In the next number, October, we shall print the results of this test, with the marks each passing member made, and some of the best excerpts from the essays in the tests. A similar test will appear in our January, 1936 number for new members who wish to secure their First Class Membership, and in every January issue of the magazine thereafter. The test has proven a success and really reflects the science-fiction knowledge, which for the most part is quite considerable, of our members. Watch the next issue for these test results, and the list of new First Class Members.

THE BIBLIOGRAPHY

You will remember that our famous author and Executive Director in the LEAGUE, P. Schuyler Miller, suggested some months ago the compilation of a grand bibliography of science-fiction to include fantasy that has appeared in magazines and books as far back as we can penetrate. Mr. Miller, along with Mr. J. O. Bailey of Chapel Hill, North Carolina, is composing his share of the work, and other members have sent in their lists of science-fiction stories for this item. If you know of any out-of-the-way science-fiction, send us the names of the stories, authors, magazines or books in which they appeared, and a few words concerning the nature of each story, so that we may know it is science-fiction. Your aid in this matter will be appreciated and credit will be given you. Many members have already sent in small lists. Among those are LeRoy Christian Bashore, Oswald Train, the Leeds, England Chapter of the LEAGUE, etc.

CHAPTER NEWS

The New York Chapter is being re-organized, as you know, because it got nowhere under the leadership of three members who were trying to compete with it with another club and even disreputing the LEAGUE to such a point that they were expelled, and we want to reform it so that it will someday be among the most active Chapters. Therefore, we are once again calling for our members who live in the city of New York and do not belong to any other local Chapter to send in their names to us as being willing to belong to the new New York Chapter under competent leadership. Headquarters will choose a new Director. Please write in immediately so that regular meetings can be started by the middle of September.

Our first foreign Chapter, in Leeds, England, held its first meeting on May 18th in the library of the Institute of Scientific Research of Leeds. All the members were present, and the science-fiction movie petitions were filled out and members are looking for more names. A dues of four pence per month was decided upon to cover secretarial expenses and the purchasing of old science-fiction magazines. C. H. Macklin was elected treasurer and A. Griffiths was made a new member of the Chapter. The members of this branch are rapidly building up their science-fiction library.

The next foreign Chapter of the LEAGUE will most likely be in Sydney, Australia. W. Osland has already held a meeting, but it cannot be called official because one of those present has not yet been enrolled as a member of the LEAGUE. We hope to have the pleasure of chartering this Chapter very soon, but the long time necessary to exchange correspondence with Australia will hold things up a bit.

At the second meeting of the Bloomington Chapter, all the members were present except Leroy Lishka. Printed "active membership" cards obtained from the Brooklyn Chapter were filled out and distributed, followed by general discussion. It was decided that the members would go on a picnic on the Fourth of July. Meetings are held at the Director's home. A dues of five cents per week was decided upon to meet future plans and events. James Tucker was elected treasurer. The Chapter has decided to make a large sign with the words "Bloomington Science Fiction League" on it in large letters and use it in a Chapter photo of the members. The fourth meeting will be held during the picnic in a local park on Independence Day.

Milton A. Rothman, 2500 N. Fifth St., Philadelphia, Pa., Director of the local Chapter, wants any member living in his city to drop in on any Saturday evening. Theodore Lutwin of the Jersey City branch, writes: "Although several members of the New York SFL and Charles D. Hornig, Assistant Secretary of the SFL, attended the June twentieth meeting of the Jersey City SFL, said meeting was postponed because not enough Jersey City members attended to make the meeting successful." The Directors of the Chapters in Philadelphia, Jersey City, Lebanon, and Lewiston have informed Headquarters that there will probably be no more meetings until September, as many of the members go away for the summer on vacation. This will probably be the case with many other Chapters, and we cannot expect any more real activity until the fall.

E. C. Reynolds, Director of the Los Angeles Chapter informed us some time ago that his outside duties would prevent him from taking charge of the local branch any longer. The new Director, William S. Hofford, was appointed by Headquarters on June 26th. We hope that Mr. Hofford can carry out the job as well as Mr. Reynolds and keep his Chapter active.

At last something is being done about the Bronx Chapter. Julius Morris, who volunteered to start it many months ago, is going to Europe this summer and the new volunteer Director is Herbert E. Goudket, a very prominent and active fan in New York. He seems to have all the enthusiasm necessary for

a beginning Director, and simply can't go wrong with the promised aid of *the* Julius Schwartz. We'll be looking forward with great pleasure to issuing a new Charter to those members in the upper part of New York City.

George Gordon Clark, director of the Brooklyn Chapter, 8709 Fifteenth Ave., Brooklyn, N. Y., will be glad to send you a free copy of his Chapter bulletin, "The Brooklyn Reporter," which is a dandy fan magazine for lovers of science-fiction. Every issue is better than the one before. The latest number, the fourth issue, has just come to our attention. Together with a number of regular departments that will interest you, there is a cover contest, an article on Esperanto by Forrest J. Ackerman, and many other absorbing tid-bits. If you are a member of the LEAGUE, no matter where you live, you will want to see "The Brooklyn Reporter," the leading bulletin in any SCIENCE FICTION LEAGUE Chapter.

"JOIN A CHAPTER!"

"I hope that a few verses will not serve to bar me from the column. I simply wish to show all non-members of the LEAGUE just what my impressions are as a member of the Chicago Chapter," writes Edward E. Chappelow, who is also a science-fiction author.

"I am one of the many members of the LEAGUE who wish to make this organization an entertaining and educational society surpassed by none.

"The variety of scientific subjects discussed by our Chapter has made it a real school to members less familiar with popular science."

And here is Mr. Chappelow's little poem, entitled "Join a Chapter!":

"If you're searching for romance,
Mysteries that will entrance,
Here's a real inviting chance—
Join a Chapter.

"Go afar to places where
There's not a worry, not a care,
Trusty guides will take you there—
Join a Chapter.

"Scan the surface marks on Mars;
Wander far among the stars;
Be a rover, free from bars—
Join a Chapter.

"Learn about outlaws of space,
Of blazing comets, as they race
In brilliant form, at terrific pace—
In any Chapter.

"Through the microscope be hurled
Right into the microbe world;
See its mysteries unfurled—
Join a Chapter.

"There's naught to lose, all to gain;
Man's future now, lies in his brain;
Develop it, but not in vain—
Join a Chapter.

"Transfer to another age;
View life in another stage;
Spread your wings and leave your cage—
Join a Chapter.

"Learn the future of the plane,
The rocket-ship, the gun, the train,
And other products of the brain—
At any Chapter.

"View the stars, forget that they
Are many million miles away;
Travel through the Milky Way—
Join a Chapter.

"Worlds and worlds of mystery
Are guarded well, but I've the key;
I am a member, friend, you see,
Of a Chapter."

A PUBLISHED ARTICLE

Henry Lewis, Jr. of La Roche, S. Dak., succeeded in placing an article on science-fiction in the "Dakota Farmer Magazine," entitled plainly, "Science Fiction," and printed under his pen-name, "Hamburger Dave." We reprint it herewith:

"Stf. is the abbreviation for fictional stories of science, dealing with plausible explanations of scientific problems yet unsolved, interwoven with scientific facts. Continued reading of stories of this type is a small education in itself, because of the actual science they contain.

"Stf. stories deal with trips to other worlds, splitting of atoms, secrets of plant life, new means of power, etc. As a whole, they are simply prophecies of the future which may materialize. They are not to be scoffed at or slighted, as many of them are quite likely to be fact in the future. Many scientific prophecies have been scoffed at in the past, yet today are realities.

"Concerns which publish this type of literature are publishing something constructive instead of destructive. Buy their material, as it's not the trash of which there is so much published today. Boost science-fiction to encourage interest in science. For when you encourage interest in science, you encourage progress."

The above article is certainly convincingly written by a member who knows what he wants to say and does so in a most forceful manner. See if you can place an editorial on science-fiction or the SCIENCE FICTION LEAGUE in a local paper or magazine. If you can get in direct mention of the LEAGUE, it will be particularly appreciated, and you will win yourself an Active Membership, as Mr. Lewis has with his article and other members in the past.

GENERAL ACTIVITIES

"The Lebanon theater manager will soon announce the SCIENCE FICTION LEAGUE on the screen. After much persuasion, I convinced him that the LEAGUE is a worthy organization," writes LeRoy C. Bashore, the most active member in Pennsylvania.

"The latest members that I acquired to join the SFL are Herbert Herr of Lebanon and Richard Ryan of Haverhill, Mass., also others. I think that I can secure Bob and George Kline, both of Williamsport, Pa., and Bob will probably want to organize the Williamsport Chapter. I have acquired many members for the SFL, and I will continue to do so, if you wish me to." We certainly wish you to! "I am going to construct a model rocket called 'The SCIENCE FICTION LEAGUE Rocket' which I will display in the show window of a popular department store here in Lebanon. I am dedicating the rocket to you and Mr. Gernsback." We wonder if Mr. Bashore will ever run out of ideas? If originality is a virtue, then he is certainly a very virtuous member! We wish that we could thank him personally for all the things he has done to advance the LEAGUE and science-fiction.

"Is it not one of the LEAGUE rules that members must answer letters from other members?" asks Number 820, Jim Blish of Chicago. "I understood it to be such, and Mr. Alex Iannone, Member Number 824, has not answered a very important letter concerning a Chapter for over a month. Perhaps he just forgot, but he is losing his chance to become Director of the East Orange Chapter for the summer."

The only correspondence a member *must* answer to hold his standing is direct communications from Headquarters and those letters sent to him in answer to his insertion in our correspondence columns. Of course, he should answer other mail pertaining to the LEAGUE out of courtesy, except advertisements and other matter that members are not supposed to take any particular interest in. Perhaps a letter of yours or Mr. Iannone's was lost in the mails somewhere, or Mr. Iannone does not wish to direct an East Orange Chapter—although, in this case, he should inform you of the fact.

NOTICES

Members who would like to form local Chapters need only have three members to secure their Charters. After the Chapter is organized, members will come in more quickly.

There are no dues or fees of any kind conducted by LEAGUE Headquarters.

We urge all of our members and readers to send their names to E. C. Reynolds, 3235¼ Descanso Dr., Los Angeles, Calif., telling him that they will be willing to support any new science-fiction movies that may be produced in Hollywood. These petitions will be submitted to the studios.

Members of the SCIENCE FICTION LEAGUE can secure discounts on current science-fiction books by

writing for them to the publishers requesting, as a member of the LEAGUE, the discount such persons are due.

There are still several members who have not claimed their certificates. If you cannot call personally at our office for it, send fifteen cents to cover handling and mailing costs. You will find it necessary to have a certificate in order to enter any Chapter, and for other times when identification is necessary.

Headquarters has prepared a four-page leaflet adopted from our editorial in the May, 1934, issue of WONDER STORIES which outlines the rules and purposes of the LEAGUE, with an application. These will be provided free of charge to those who wish to join and have not already done so, or to members who want to convert others. Please send a stamp to cover mailing cost.

Due to lack of space, the number of pages allotted to the SCIENCE FICTION LEAGUE department has been reduced. Much of the material repeated month after month has been omitted, and will be in future issues. If there is anything we have not made clear, or if you desire further information concerning the LEAGUE, just write in to Headquarters and we will do our best to enlighten you.

SUGGESTIONS

Here are a few advance suggestions of how you can help the SCIENCE FICTION LEAGUE:

(1) If you wish to form a local Chapter of the LEAGUE, get a newspaper to print a notice in the society or club section. They will do this free of charge and it will aid you in securing many members.

(2) Send to Headquarters all the suggestions that you believe will improve the SCIENCE FICTION LEAGUE and its activities. You may have some valuable ideas that will greatly aid the cause of science-fiction. This department will appear monthly in the magazine and will be used as the voice of the members and executives, so do not hesitate to use it freely.

(3) If you are a student in high school or college, try to form a Chapter of the LEAGUE in the building, with students as members. Most educational institutions allow for clubs of all sorts and would be pleased to harbor one more, especially one with standards as high as the SCIENCE FICTION LEAGUE. These school Chapters will be treated in Headquarters as any other Chapter. In order to form a Chapter of the LEAGUE, send your name to us with those of all other members who wish to form the Chapter and the name under which the Chapter will be known. We will send you an officially signed certificate, confirming the existence of the Chapter with its number.

(4) Try to write editorials propounding the merits of science-fiction in general and place them in your local newspapers. Stress the fact that science-fiction is educational and broadens the minds of the readers.

(5) Study science-fiction carefully and form a series of conclusions in your mind as to its merits and accomplishments. Organize your ideas so that you can talk freely and convincingly to potential followers on the subject. Be able to tell at a moment's notice just what it is and why you are an enthusiastic advocate. This, with Suggestion Two, is very important to the purpose of the LEAGUE. All members who are instrumental in securing any special attention to the LEAGUE will receive due acknowledgment and will find that it will be profitable to them to be so mentioned.

The LEAGUE has one prime purpose—to spread the worthy gospel of science-fiction. That is the basis of the LEAGUE, and its goal will not be reached until everyone knows of science-fiction and respects it as the most powerful literary force in the world. We can hardly hope for this for a long time to come, but every scheme, plan, or idea that will aid us in reaching that goal is welcome. New ones will be broached every month by the executives and members—will you do your part? We do not expect every member to have an inexhaustible reservoir of ideas, but we will appreciate all suggestions offered.

If you have not as yet joined the LEAGUE and wish to do so, you will find application blanks in another part of the magazine.

WHAT IS YOUR SCIENCE KNOWLEDGE?

Test Yourself by This Questionnaire

1. How could we tell the existence of a two-dimensional creature? (See Page 393)
2. How many variables are there in the Einstein theory? (See Page 394)
3. How many variables are in common use every day? (See Page 394)
4. How far are we from the center of the earth, approximately? (See Page 395)
5. What does gravitation depend on chiefly? (See Page 395)
6. What are neutrons? (See Page 395)
7. In what condition are atoms inside a sun? (See Page 395)
8. What is peculiar of the companion star to Sirius? (See Page 396)
9. Have meteorites ever done any damage? (See Page 399)
10. What is mass? (See Page 411)
11. Does Einstein claim energy to be wave or particle? (See Page 420)
12. Who announced the discovery of "cosmoplasma"? (See Page 421)
13. What is the action of the Crookes tube? (See Page 421)
14. In what chain of mountains is the extinct volcano Cayambi? (See Page 436)
15. With what animal does the science of ornithology deal? (See Page 441)
16. What is the scientific name of the finger-bones? (See Page 443)
17. Give the term science uses to describe the primary quills of birds. (See Page 443)
18. How does the temperature of a bird's blood compare with that of a man? (See Page 443)
19. Has luck or accident had anything to do with evolution? (See Page 444)
20. Do any birds have more than four toes on a foot? (See Page 445)
21. Why does not the condor prepare a complicated nest, like other birds? (See Page 448)
22. When does the condor lay its eggs, and how long do they take to hatch? (See Page 448)
23. Of what ancient race was SPQR the emblem? (See Page 457)
24. What is the name of the science that deals with society? (See Page 469)
25. Tell what you know about ultra-sonics. (See Page 484)

IN this department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good, old-fashioned brickbat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 25c in stamps, to cover time and postage, is remitted.

A Toast!

Here's to WONDER STORIES,
The finest on the stand.
Here's to *all* its editors,
The best in all the land.

Oh!—here's to WONDER STORIES:
For awhile we'll say adieu,
And here's to all its editors.
We'll always stick by Y-O-U!

CHARLES H. DEEMS,
Hill Top, Ark.

The Plutonian SFL

Editor, WONDER STORIES:

The enclosed documents are being sent to you in accordance with orders received by me through the media of the traveling tent caterpillar, on the instant of April last, before my Plutonian mission. If you have heard nothing of this before, it is probably due to the fact that the Dictator's stenographer had been out with her boy friend, the Third Degree Martian Gadzook on the night previous and forgot to send you the data.

That, however, is no fault of mine. And besides, our arch enemy, Wollheim, would have probably intercepted it, if she had. (Which I can bet any amount she didn't.)

Best wishes for an unimproved WONDER STORIES.

ROBERT W. LOWNDES,
Darien, Conn.

P. S. No need to send communications directly to my padded cell. I love to see the Post Office dept. put to work occasionally.

REPORT of the PLUTONIAN AMBASSADOR by Sir Doc Lowndes, SFL, SPWSSTFM Observer

The 77th meeting of the Plutonian Chapter of the SCIENCE FICTION LEAGUE was called to order by the Director in the usual manner of rapping with his ear tips. Minutes of the previous meeting were mumbled and accepted with only 3 corrections, the mistakes being the purpose, time, and business of the aforementioned previous meeting. After the secretary had removed the Martian spine nails from his person, members having decorated his seat with them while he was engaged, the standing committees were allowed to make their speeches and sit down. After the gist of the recommendations had been repeated twice by the Director, and old business was tabled, the Chapter set about to their monthly ritual: the placing of the latest copy of WONDER STORIES in the eternal library.

By means of an honorable game of crap, in which only four dice were loaded, a member was selected to perform the rituals. The Director then took the best copy from the pile and held it up so all that were in the room might see. Cheers broke out, and only after fifteen minutes rapping by the Director was silence and order restored. This was because the most enthusiastic of the members were still hoarse from the last meeting. The Director made a low graceful bow, whose beauty was marred only by his suspenders' bursting, and after returning with a new pair, following a hurried exit, he handed the copy of the June, 1935, WONDER STORIES to the Adjuster. The copy was at once taken to the electromagnetic staple remover, and after prostrating himself before it and saying in a low tone, "In the name of Tucker," thirteen times, he turned on the switch. It was a fascinating sight to see the staples wriggle out of the magazine. As they appeared, the members all pointed the foreclaws and hissed imprecations. The Adjuster then took the copy to the shaving machine which neatly trimmed the edges. Thereupon a personal inspection was held, each member examining the edges under a powerful microscope, and thumbing the smoothed copy. In due time, it was proclaimed good. The copy was then stitched together with Venusian thread made from a substance similar to the old Terrestrial Welsh Rabbit.

Now the Director rapped seven times with his ears and called for improvements. Member no BJ 25 suggested that the streamer be removed, and as a chorus of approval met his words, the Adjustor operated a switch on his machine, and the streamer faded from view to be replaced by an extension of the coloring on the picture. At the suggestion of another, the "NOW 15c" was removed and coloring substituted. This I thought was most irregular, but later, I found that the things they did to WONDER STORIES were positively criminal.

Paul's cover was withdrawn from the outer coating of the copy and framed, the picture being replaced by Winter's interior decoration for "Pygmalion's Spectacles." A member with artistic aspirations drew in another illustration, which I thought was terrible, but which was seen with delight by the Chapter. The contents page was done over until all material except the titles of stories, the sacred cut, and crest were left. The title page looked strangely naked without the filler in light type. But the desecrators had only started. A member who had been trying to crash WONDER STORIES for some time, now persuaded them that since the "Mystery of the -/-" was only a mistake, his story (I never did get the title) which had been rejected by 3 magazines ought to go in instead. In vain did I protest. The Director merely explained patiently that since Mr. Nevins had had several stories in the magazine, and the other member had had none, it was only fair that this one should be given a chance.

This, good sir, was to be the copy of the June, 1935, WONDER STORIES, handed down to posterity by the Plutonian Chapter, SCIENCE FICTION LEAGUE. I looked over some of the back issues, and none of them was recognizable. When a member wrote a letter to the Editor, and said letter was not printed, one was removed from the finished copy and the member's letter inserted in its place. And they had the audacity to make flattering comments on it, and sign it with the Editor's emblem. "We are always pleased to receive letters from our younger readers, especially when they show themselves to be as alert as you—" "Your suggestion is a capital one, and we will give it careful consideration." "Your letter speaks for itself; you certainly know yonr subject."—These were the inane remarks thrown in at the end of even more inane letters.

Finally, I rose and tried to reason with them. I might as well have tried to talk to a blank wall. At first they were indifferent, then irritated, and finally furious. Cries of "traitor!" "meddler!" went up. The Adjustor made a hasty move for the machine, and a shower of staples flew at me. They turned upon me to a man, and though I defended myself valiantly with the rough edges of the "Improved" WONDER STORIES, which lay about, (I refer to the discarded edges) I was overpowered, and deem it a miracle that they did not take my life. Such action, I understand, is a common occurrence in the Plutonian Chapter, and explains why none of the Official Ambassadors have ever remained there for any length of time.

My fulsome regrets for having delayed so long, but after my most harrowing experience with the Plutonian Chapter, SCIENCE FICTION LEAGUE, I have taken a much needed rest, and am just now recovered sufficiently to forward you my report. As you know, my mission was both secret and unofficial; however, I encountered no difficulty in entering the Plutonian borders. In fact, I was welcomed by them. Earthmen, as is obvious, are not frequent visitors to the dark planet, and many of the inhabitants have never laid eyes upon a denizen of the inner worlds. I saw nothing amiss in going as an ordinary SFL member on a private tour, and soon found myself an honored guest, as many among them had heard of me. This is all digression. Above is my report, uncolored by personal prejudice, and you may act upon it as you see fit. I make no recommendations; let the records speak for themselves.

(We are printing the above, should we say, in parallel to Bob Tucker's letter on "The 196th Convention" that appeared in these columns some time ago. Need we say that the actions of our Plutonian Chapter astonish us? No, we needn't. We'll have to re-organize it like we are the New York branch —but we'll have to be extra-careful with them, as our Plutonic friendship would cease to exist if we should hurt their feelings.—*EDITOR.*)

Old Friends

Editor, WONDER STORIES:

Really, sir, I was reasonably certain that when you had finished your perusal of my missive concerning (more or less) the May issue, you would go seriously about the business of celebrating its advent by a wee bit of apoplexy . . . . instead, I was knocked for a loop to find it in "The Reader Speaks" this month. Thanks; it was sporting of you, considering some of the things I said.

But since you have printed and answered it, I reckon I must take up the cudgels again in defense of my arguments.

I don't think your first statement *quite* right. You may, and probably do, print the best stories you get, but not the best you *can* get! Yes? No? I still say yes.

Love story magazines murder the subject of love even more terribly than your authors (and often your correspondents) do. I wasn't pleading for lurid passionate scenes; I was beseeching you never to introduce 'em, and to soft-pedal the mush . . . . Our gentle white-haired old lady who runs around in "Memory Machine" flinging "You bloodthirsty old fool!" hither and thither is a new one on me. But most of a certainty, I would prefer mush.

I concede your third point graciously, and with marked enthusiasm.

On your fourth, the "Well, *mostly* all," shows you up. Inimitable Paul? Anybody who wants to imitate him is balmy, says me. Now, Marchioni did what I consider a *good* job for "Memory Machine," and Schneeman was not so far behind him for "Waltz of Death."

To consider five—and undoubtedly get "edited"—maybe the ads are not as bad as they appear on the surface. Maybe they're worse. And maybe there are some lovers of the particular kind of art advertised on the 2nd ad page in W. S.'s reading public. Probably, for that matter. But, if I were you, I'd hate to let prospective fans see your advertised belief of the fact. I haven't got anything against it, personally, except that I came nightmarishly close to being forbidden science-fiction last summer, by reason of the ads coming to the paternal eye. I haven't gotten over that scare yet, and I cherish grudges against things that endanger my only love's existence. And they're so blatantly *cheap!* The ads, I mean.

Six. Story introductions were not what I was cheeping about. (That word again!) It was that business a while ago about the number of words per issue, which you, thank heaven, have stopped; and it was the stories announced as the cream of contemporary fiction. Why not let us help judge? No matter what you call them, if we don't like 'em, they're flops.

Yep, you're trying and improving. But try a little harder, won't you? By the way; there were only six really twerpy ads this time. *Thank* you.

And eight. Well, my folks are well, but they're awfully angry with *you*. You see, in my girlish innocence, being as how we have no Cadillac, I went over to a neighbor's and tore off the top of *his* Cadillac. At the time, I thought it was a bright idea, but now I'm O.O.B. (Out on bail). I darkly suspect you of kidding me.

I think it's because I insist on covering every conceivable subject before I'll quit that my letters reach such preposterous lengths. But you can't stop me, so on I romp to new and greater heights of unintelligible verbosity. To proceed from where I left off to muse:

I'm not saying I'm mad, but I wish I'd chosen the luncheon offer.

Ummmmm. What next? "The Waltz of Death," I reckon. I consider that book one of the best-written, most coherent, and interesting novels I've read this season. But I'll scream if you tell me again that it's science-fiction—what if it has got about four pages of theories on vibrations in it?

I have discovered a real artist, but he's not with you—and I wouldn't *think* of naming a rival pub in your pages—but to drop a subtle hint, get Dold if you can, will you? Yeah. Subtle.

You needn't have bothered about spoiling the artistic effect of the May cover by wording . . . . there was no artistic effect.

In the July issue there were two atoms, one memory machine, one time machine (and an uncommonly good one), and a piano. I insist, implore, and order you to have an interplanetary story next month. Whereinyell's science-fiction without interplanetaryarns?

Two matters remain, the contest and the Science Fiction Test. About the first (no kidding) I've written my entry, and if I get up courage enough, I'll send it in. But if I do, it will just be to prove that I can be serious, for, although you won't believe that unless you read it, knowing me, there's not one li'l wise crack in it. I have dreams, but no hopes, of the prize . . . . Concerning the test, I'm downright scared to enter. I've never even heard of the "cover-copper," I.N-18; and how could I have seen "Metropolis" or "Deluge"? And how can you write 250 words about your friends' reactions to s-f when what they do is listen or look politely for about thirty seconds, at the end of which time their eyes begin to glaze and they go off into private little daydreams until I shut up, exhausted. And the three I have converted—and I plead guilty to this charge, too—are slightly ashamed of the cheap appearance of the mags; and *they* don't go beyond the adventure of the stories; abstract science is an unknown quantity to them.

Well, heck, I didn't mean to practically write my essay here. But I still think you haven't much chance in the test of getting a decent grade in the nineties unless you've a library that extends from here to Constantinople and back again, and a movie experience like Forrest J. Ackerman's.

I know I'm exaggerating, but it peeves me that I'm so helpless just because I'm not old enough to remember silent pictures, and old magazines.

I seem to have exercised the privileges of an old friend in telling you just how to run the magazine, and how very wrong you are, and how unfailingly right I am . . . . forgive me . . . . but we really are that now, aren't we? Old friends . . . . ?

MILDRED VIRGINIA KIDD,
Catonsville, Md.

(A few days ago our advertising department informed us that there would be marked changes in the advertising. We hope that these have met with your approval.

We agree with you in part of your sixth point. That is the reason we stopped bragging about how many more words we give you than any other science-fiction magazine—we realize that the readers are not buying words but the best science-fiction they can secure. If there was a standard quality all the way around, then it would be worth stating constantly that we give you more words than any

other magazine of the type. And this is the very fact that makes us disagree with you in another point. In the blurbs of the stories, we try to arouse interest in the fan so that he will want to read them. If we state that it is the author's best work, or the most thrilling story of the year, or better than the usual run in any way, it is that we sincerely think so. We don't believe in "talking through your hat." Always remember the difference in tastes of each individual reader.

We would certainly liked to have been present when you tore the top off of your friend's Cadillac —or maybe it's well for us that we weren't. What a veritable Tarzan of an act it must have been for a girl! You ought to know that we wouldn't kid you. That luncheon offer is still open. We want to see a Kidd eating at Child's, or maybe Young's famous place at Times Square. One of these days some pun of ours is going to boomerang.

Seeing as you'd scream if we stated again that "The Waltz of Death" is science-fiction, we wouldn't dare to take the risk—though you can be sure that it is.

We feel that our science-fiction tests are a success and really reflect the SCIENCE FICTION LEAGUE members' knowledge of science-fiction. The majority of those who take the test pass it, and many of these with marks in the nineties. Some of the questions refer to things that happened or were written many years before the members were born, but an active fan has read all about these things. For instance, you can know that Fitz-James O'Brien's famous short story, "The Diamond Lens," was first published in the Civil War days without actually having been there when it appeared.

It is our one desire to remain, as you say, old friends.—*EDITOR.)*

The Word-Coiner

Editor, WONDER STORIES:

That's a pleasing one, the contest cover for July. And there are so many unusual things about the Paul-painted picture, I am sure some mighty interesting short-shorts will be evolved. Frank Missman, Jr., Richard Russell, and I, were discussing the cover and contest at the June meeting of the Esperanto Club of Los Angeles, and were wondering why so much water covered our upside-down world, if the red areas on the continents were atomic-fire disintegration, what the "peanut-peoples'" machine was, the purpose of the spaceship, etc. Anticipate reading the winners' explanations.

—By the way, at our Esperanto meeting the head of a visiting scientific expedition from the Easter Islands revealed to the members and guests an astounding discovery—a scientific sensation! He spoke in Esperanto, his speech being translated into English, for the benefit of guests, by a young Esperantist from Ireland. Unfortunately for this column, I cannot reveal the information; all present were requested not to repeat what they had seen and heard, as the discoverer desires to make known to the press and public, at his own time, in his own way, the epic result of the expedition. Perhaps by the issue this letter appears, however, all readers will be aware of the outstanding discovery by the Easter Island explorers . . . .

And speaking of Esperanto—in which there is an increasing interest being shown, I note, by future-minded fans—should you care to print this notice, I wish to say that I shall be pleased to supply WONDER readers with a printed pamphlet containing the Complete Grammar and Pronunciation of Universalanguage plus a sizeable Vocabulary of Esperanto's root-words. This is a non-commercial service, 5c only being required to cover cost and postage. My address: 530 Staples Avenue, San Francisco, Calif.

The new contents page is a neat improvement. Thought "Justice of the Atoms" an average story, "Thief in Time" a good one, and "The Memory Machine" a *very* good one. Should certainly like to read further of Mr. Sachs' works. His characters' actions seemed psychologically excellent, to me. Regret I've fallen behind on the instalments of *La Morta Valso* (Esperanto for "Waltz of Death"), but have been quite interested by the opening chapters I *have* read.

Jack Darrow sends you an item about RKO's "She," which film, the hope is expressed, will pave the way for Merritt's "The Moon Pool." Silver-screen enthusiasts not already aware of the following, may be interested to learn there is a rumor about that Universal Studios is contemplating purchasing film rights to Merritt's "Burn, Witch, Burn!" to couple with "Creep, Shadow" in one sensational science-fantasy film. Haggard's "King Solomon's Mines" is being filmed across the sea in England; also, Wells' "Whither Mankind?"—for which a million dollars has been appropriated!—and "Man Who Could Work Miracles." Scientifilm fans will not want to miss "Air Hawks," which includes a scientist (mad, methinks) and aeroplane-explorer ray in action; and "Death from A Distance," a stratosphere-story—both of which are already playing the silver-screens throughout the U.S.A.

FORREST J. ACKERMAN,
Scientifictionist,
San Francisco, Calif.

(One good thing about Paul's July cover, the contest one, is that readers cannot "pan" him for any inaccuracies on it. We can get out of it very easily by saying that such and such a mistake was placed there *purposely* to see if the contestants would notice it. Seriously though, this was really done. On the picture of the Earth, you will notice, Europe is missing entirely. Some of the stories explained why Europe was missing.

Your second paragraph, concerning the discoveries on Easter Island, is indeed of great interest. We are anxiously awaiting verified information. Easter Island has always been an intriguing place since the first day it was discovered, and has already been the setting for more than one science-fiction story.

You seem to be very strong for Esperanto. You might be interested to know that one of our latest members of the SCIENCE FICTION LEAGUE, Herbert Haussler, Boelckestr. 5, Reichenbach im Vogtland, Germany, Member Number 952, is an Esperantist, and a very enthusiastic one. You might wish to write to him.—*EDITOR.)*.

Kraus's Science

Editor, WONDER STORIES:

I received the April edition yesterday and have read every story except "In Caverns Below." Make no mistake, however; I do not pick out any particular story but just read from first to last. "Reader Speaks" always claims my attention first in case, by some miracle, you should print one of my letters.

This month's cover is good, but inaccurate; the monsters depicted on the same scale as the diver were microscopic in the eye. Paul ought to have left out the diver. I liked the story the picture was taken from for two reasons. Firstly, for itself, and secondly for the enjoyable time I had pulling it to pieces each about the size of one of those monsters. Mr. Kraus is all wrong in his ideas and here's why.

The lenses of Walker's eyes were supposed to become nearly spherical and this would have the following results:

(1) The focal length would become too short to form a clear image anywhere near the retina and if it did—

(2) Spherical aberration would produce a much distorted image with a rainbow border due to chromatic aberration.

It is also obvious that the magnification produced would not be sufficient to magnify the tiny animals up to life-like size. Again I hope Mr. Kraus must know that when the eye's muscles (i.e., the ciliary muscles) relax, the eye lens has tension taken off it and becomes thicker, i.e., nearer to being spherical than before when the muscles were stretched. Thus the relaxation produced by the anaesthetic would no more produce normality than when contracted; in fact, it would have *less* tendency to do so. There was also a (I suppose) printer's error; the airport is Croydon, not Craydon.

Mr. Gardner's "Insect World" has a "different" angle, but it would be better written in a longer form.

"The Missing Hours" was good, but just one question, please. How did the criminal get into the room and focus his ray on Mooney and Wylie? Also, did he murder Wylie, or did he order Mooney to do the dirty deed? I suppose he "rayed" his way past all the police force in headquarters including the sergeant next door and bearded the Sherlock in his den.

What stf. wants more than anything else are plots which do not drip water. You will say "Fault can be found in any plot, no matter how good." That is true, but not so many mistakes need be found as in "The Phantom Monsters." Criticism is good for authors and also gives readers something to puff their chests out about, but I hate to see too obvious

mistakes when a little thought and reading would correct them.

If someone doesn't write an interplanetary story sooner or later, I shall go and do it myself, and you wouldn't like that, Mr. Editor.

June will see your seventh birthday (I think it is 7) and with a record to be proud of. Congratulations and may you reach your 77th.

W. A. DYSON,
Yorkshire, England.

(You must use your imagination a little in "The Missing Hours" and remember that the criminal had a powerful weapon. It would not be hard for him to get past forbidden doors with the aid of his hypnotic ray.

We have several very excellent interplanetary stories on hand for publication. Watch for them. The June issue was our sixth anniversary and we are now well into our seventh year.

Mr. Kraus, author of "The Phantom Monsters," had your letter referred to him and attempts to defend himself in the following quoted paragraphs. He can be considered an authority on microscopy, the subject of his story, and he is the editor of the only magazine on the subject printed, "Practical Microscopy."

"While it is true that if the lens of the eye became nearly spherical, a clear image would not be produced on the retina, it is also true that the eye is capable of considerable accommodation. Thus, if you look at a newspaper held ten inches from the eye, objects at a distance are not clear to you, and *vice versa*. If you looked at an object a thousand feet away and gazed at it steadily, all items closer to your eyes would be blurred. On occasion, a person who cannot see an object clearly when gazing at it will be able to get a very clear image by moving his head from side to side, causing the light beams to strike the retina at the edge (seeing out of the corner of the eye, so to speak).

"There is no reason to suppose that spherical or chromatic aberration would be produced. Changes in the lens, in old age, do not produce such aberrations. Pressure within the eye-ball might, but one can see colors even when the eye is closed.

"However, you will perceive that the organisms illustrated by Paul are not 100% accurate. This is particularly true of the rotifer. Consequently, aberrations were automatically assumed to exist, coupled of course with the imagination.

"In any attempt to portray a dream, it is essential that all characters in that dream be illustrated. Thus, if Artist Paul were expected to show a picture of you falling out of an airplane, he would show both the airplane and you hurtling through space. He would not illustrate you lying in bed, your head dangling over the side and a cloud-like representation of what is supposed to be a dream-cloud. It was therefore essential for Paul to show both diver and organisms.

"None of the readers have pointed out, however, that some of the organisms shown are found in salt water and others in pond water.

"If all muscles of the eye were greatly contracted, the internal pressure of the eye would be considerable. The eye-ball is controlled by four rectus muscles (medial, lateral, superior, and inferior) and a superior and inferior oblique. The ciliary muscle relaxes the suspensory ligaments of the lens and allows the lens to become more convex when the muscle contracts. It is the chief agent of accommodation, but is quite absent in myopic eyes. Either would cause the rectus and oblique muscles to relax and hence relieve pressure."

If you have any further argument with Mr. Kraus, we would be pleased to receive your comments. —*EDITOR.*)

A Letter from 1940

Editor, WONDER STORIES:

I have just finished the rather disappointing perusal of my June 15, 1940 copy of WONDER STORIES. The magazine has been steadily slipping in my estimation for the past five months, but the second June number is the worst yet. Why—oh, why, Mr. Editor, can't you give us stories like those of five or six years ago? *Those* were the days of real stf. Remember such unsurpassable stories as "The Man Who Awoke," "The Exile of the Skies," Weinbaum's matchless tales, and Philip J. Bartel's stories of the fiftieth century? Remember, I implore you, the incomparable authors of that period: Laurence Manning, Eando Binder, Edmond Hamilton, John Beynon Harris, and others, and then tell me how anyone with a shred of perspicacity can seriously contend that science-fiction is improving.

Please don't think that I disapprove of *all* the new authors. Virginia Kidd's stories are usually delightful. And of course, Hoy Ping Pong's satires are always superb. "The Procrastination Machine" was undoubtedly the best piece of scientifun that has ever gone through my projector. But such stories as "Death to the System" by Earno Scruples, and "Ruled by the Sun" by Otto B. Slayne are a disgrace to *any* science-fiction magazine—even WONDER STORIES. I have heard it rumored that one of these writers is a polygamist! The Editors of WONDER STORIES should be proud of themselves for upholding such insidious principles.

But, by far, the greatest objection to WONDER STORIES is the general make-up. It cannot compare favorably, in this respect, with a single one of the six other science-fiction magazines on the market. WONDER STORIES used to be at the head of its field; please wake up, Mr. Editor, and re-establish your once-splendid magazine in its deserved position. Here are a few suggestions that will help you to regain your rightful place in the estimation of your readers —if you will carry them out.

First, Fire Hubert Mushmouth, and hire a new annunciator. Why did you ever hire this guy in the first place? He talks like an old-time Alabama negro. I am able to understand only about half his words. Moreover, he is usually behind, or ahead of, the printed words on the screen.

Next. Be a little more consistent with your sound effects. A meteorite colliding with a rocket ship in empty space would *not* make any sound to the occupants of a second. Even a five-year-old should know that.

Next. Place the illustrations on the film somewhere near the scene they are supposed to illustrate, instead of at the beginning of the story. Who the heck wants to run his projector backward and forward half the time, trying to view the illustrations in their proper sequence?

Next, cut out the advertisements. They serve no practical purpose and only cheapen the magazine. I am sure that Congress would give you an appropriation from the U. S. Treasury to compensate you for the pecuniary loss.

Now I am sure that if you will carefully follow these instructions, WONDER STORIES will be, once again, the best science-fiction magazine on the market. If you disregard them, you are doomed to failure. So—take you choice.

GEORGE W. GREENE,
SFL Member Z87%-OK,
Mercedes, Tex.

(We must disagree with you on your first point. The stories we published, when the magazine was printed on cheap pulp paper so primitively, were exceedingly hackneyed, and it is not until recently, with the December, 1939, issue that the material really started to improve upon the instigation of our New Policy, which calls for *new* plots, *new* theories, *new* ideas. The stories you condemn have been highly commended by other readers from the Uknighted Snakes of Amerrygoose and other countries as well. Indeed, you would hardly compare "The Man Who Awoke" with our recent "The Bloody Toothpick" or "The Washwoman's Revenge." We sometimes wonder how the magazine held its readers way back in 1935, we have improved so much since then—and you can take our word for that. We have now reached the point where most of our readers are of the higher type, with the best Keepers in the country and attend the most highly respected Mental Hospitals.

Do you really like Virginia Kidd's stories, or are you just *Kidding*?—that's a new pun we just thought up—how do you like it? You will not see any more stories from Hoy Ping Pong for a while, until he returns from his tour of the Solar System. In case any of our readers are interested in these tours, they leave every sixth Saturday in the month from the Pennsylvania Grand Terminal Central Station in Nyork, 47 days, all-expenses, price $4.6.6.7.

We'll have you know that our annunicator, Hubert Mushmouth, is of the finest New England stock and has passed all the tests required in the A. R. N. code. Perhaps there is something wrong with your projector—or the terrible stories of our competitors may have impaired your hearing apparatus. Next thing you'll be telling us that the film has scratchy edges.

We must admit that a meteorite crashing into

a space-ship would not be heard by another ship, but the inaccuracy was placed in the film purposely for effect. Remember that our unfortunate readers who can only afford the sound equipment would lose part of the story if the sound did not appear on the record.

We will take up the matter of illustrations with our art department. You should not kick about the ads. We could make it much worse if we superimposed them upon the stories, like our *worthy* competitor, ******* Stories.

We are pleased to inform you that the circulation of the magazine has now passed its two million mark.—*EDITOR.)*

(P. S. The above letter is printed to satisfy those of our readers—back in 1935 now—who complain because it takes several months for their letters to get into print.—*EDITOR.)*

Above His Hopes

Editor, WONDER STORIES:

In my last letter, I gave you a good deal of panning about your stories and artists. But I take it all back! After reading (or was it trying to read?) another stf. mag, I gave up all hopes of finding stf. even one-tenth as good as that which I have read in W. S. In fact, I was so disappointed in the other magazines that I sat right down and wrote this letter without waiting for the July issue of your most noble publication.

Some reader wrote a short time ago that it might not be a bad idea to get Dold to do some of your illustrations. Well, I think it is just the opposite way around; never, never, for your readers' sakes, get him. Many of your critics say that Paul does bad figures; if Paul does bad figures, I'd be ashamed to express my opinion on Dold.

As to the comparison of stories, the other mags are doing just what you are trying to prevent; they are giving their readers, instead of a few of the very best stories, a lot of trash (I could hardly call it that). However, it seems that they have published a lot of stories, by one of your best authors, Stanley G. Weinbaum, in person! I have not read these stories, but rarely has anything of Weinbaum been bad. If this is the case, how did you ever manage to let him get away from you?

Now that I have expressed my opinion as to how much better you are than the other stf. mgs, I'll come back to earth and tell you what I think of the June issue of W. S. After reading the first two installments of the "Waltz of Death," I arrive at the conclusion that it is another of the greatly glorified (but rather stale) serials, such as the "Fall of the Eiffel Tower." Do me a favor and lay off such long detective stories. As for the other stories, SUPERB!!! Believe me when I say that this issue is one of the best you have ever published (except for the "Waltz of Death"). Laurence Manning has come away from the weird type of story he has been writing, such as "The Moth Message" and "Caverns of Horror," and has given us a story with a plot which I have never seen equalled. Congratulations to Weinbaum and Varick Nevins for their continued line of A-1 stf. Sterling Cramer did an excellent job in his comprehensible explanation of the fourth dimension, as well as giving us another new story. It seems to me that you could get along with only Paul and Winters on your art staff. I have rarely seen an illustration I liked that was done by some other artist. Many others have written to you on this same subject, so why don't you do something about it or give us a reason why you can't?

RAYMOND HOOD, JR.,
Stamford, Conn.

(We have not let Stanley G. Weinbaum get away from us. He is writing for this magazine right along, but there is no way of preventing him from sending stories to others. It all started with one of his stories that we rejected. It was a good story, but not within our policy. Rather than discard it, Mr. Weinbaum sent it to one of our competitors where it was published. You can be assured, however, that we will never turn down any of his work with the quality of his "Tweel" or "van Manderpootz" series.

"The Waltz of Death" received some very high praise and was written by what is known as a "slick" author—those who write for the *Saturday Evening Post, Liberty, Colliers*, etc., so that there is no question about the author's ability to write. —*EDITOR.)*

Spingtumpers and Gunches

Editor, WONDER STORIES:

Why harass the poor readers? Why keep them wondering what you're going to do next? Loahdy, loahdy; I done looked twice to belie' mah eyes. I stood before the monthly exhibition of new magazines for five minutes, with the same expression on my face that one has when they see a magician pull a hat out of a rabbit.

Does the decrease in price mean that the deficit must be taken in the neck by the authors, as your filler on page 63 would lead one to think? If this be the case, then give us back the 25c size before all your authors go over to the other magazines, or, perhaps, a padded cell or the bread line (after pawning their last typewriter.)

I'll leave that for the moment.

The cover was pretty poor this month. However, the idea is certainly unique. That "whoopie-soup," the Rue-de-Vale-expressioned gentleman is soaking up must be 190% proof Fantishire Ghurglebon. One sip and you see a plant-man (or woman, as the case may be). Two sips; presto, two plants. Three sips, three plants. Four sips—etc., etc. The uniqueness lies in the fact that the dyed-in-the-wool scientifan need no longer see pink elephants, striped alligators, double, or what-not when he can just as easily see something of a scientific nature. This idea can be carried on indefinitely until the scientisot passes out, or until the next issue of WONDER STORIES is passed out. (Fantishire Ghurglebon—Distilled from the finest Scienectars and Elixirs of the Post-Prohibition Era—At a price *YOU* can afford.—Advt.) . . . . Here's a suggestion for the strip at bottom of page: Beneath the statement "The Best in Science Fiction" put this statement: "The Best is None Too Good." . . . . Noticing all the comments in the Spingtumpers Griping department, I imagine the cover should have the strip running vertically down the center of the cover, and not the name inside. You will find that this will attract the curious more than a change of price, lurid coloration, or Paul's sig will . . . . You might even try leaving the cover perfectly blank. In so doing the potential reader will grasp it eagerly wondering why it's gotta be like that, and of course, after purchasing it he *will wonder!*

Don't let this phase you, tho', dcah Ed., or you, either, Mr. Paul.

The contents page was much better this month than last month. I just don't know what was wrong last month. Perhaps it was too dark, or too light: or again it may be because I didn't look at last month's contents page . . . . Merely as a suggestion: Shave off 3/1000 of an inch from Mr. Gliggenbloddle's nose, move Mrs. Gligg-etc. 2 and ½ micrometers closer to her husband, and let the lady, Spirit of Romance, go Nudist if she wants to. (I presume she wants to.) Also, don't list the stories and articles in their regular sequence through the magazine; mix them up so no one will know where to find what, and by the time they get this straightened out, the next issue of WONDER will be on sale. Now you see, in this way, he won't get to read the stories; therefore he can't criticize them, and the poor harassed author will see that his story must have clicked; and naturally he will turn out far better manuscripts—Or am I wrong?

The editorial this month was superb. If you'll wait just a moment, I'll read it and let you know how I liked it . . . . Uhuh . . . . Yes, it was very good. It surpassed next month's editorial, even already . . . . What—how do I know? Well, why bring that up?

I notice you missed one very interesting experiment that was performed recently. It seems that a Mr. Benjamin Newton Isaacson Einsteinson, the noted specialist on Orients, author of "The Orientindentes, Their Failure to Appreciate Art," performed a very interesting experiment with a gold fish. Taking it to the South Seas from his home in Skattenooga, he released it, and in just 32 years, 3 days, 2 hrs., and 13 minutes that dern fish was home and safely ensconced in his own little gold fish bowl. How did he know it was the same fish?—Sorry, I'm a little hazy on that point.

The Questionnaire was the best thing in the issue with the possible exception of "The Reader Speaks," the LEAGUE Dept., the advertisements, or the contents page. Without looking at one question I answered them all, giving myself a grading of 5% for each correct answer. Imagine my embarrassment, when checking up, to discover I had received a total

grade of 137%. Doesn't that set a record of some kind?

But now it behooves me to be serious at least once in this inane (or should I say harebrained) epistle. Concerning the announcement of the new price: I understand the purchase price now is around ½c per word. To make this drastic reduction in price the author must take a 40% cut. Consider the author first. It is a well-known fact that authors must eat even if they're authors. If they don't eat they don't live long (or very long, anyway), and who ever heard of a dead author writing a story? The poorer pay you pay the author the poorer his material will be, and the less circulation you will have. Why is it that *Esquire*, and such magazines, have a clientele that really pays them enough to really pay the authors? Because they pay the authors a good substantial price for their material and the authors are naturally willing, and eager, to make their next story the best. You must realize that your position is only that of middle-man; your publication is only the medium of exchange by author to reader and *vice versa*. Also you must realize that you are dealing with a very fickle lover—your public. Of course, there are always us old fogies who stick loyally, but to hold the attention of the new reader, you've got to have something. And that something isn't half-paid-for stories. I'd go on like this for a while longer, but I think you see what I mean.

Well, now to get back into the old style. I notice by the listed forthcoming stories that you have a humdinger coming up, namely, "One Million Skillion Letters." Undoubtedly this refers to a story having some bearing upon the present chain-letter fad that has swept the country, burying the entire middle-west under a blanket to a depth of 18 feet; also swept the Pacific seaboard leaving millions dimeless in its wake. Now therein lies a real problem for some of your mathematically inclined readers. The problem being: How many chain-letters would be necessary to fill a fourth-dimensional cubispherimid whose dimensions are 13 x 82 x 76 x 29 x 00? (Forrest J., please note.) . . . . Aside from that one story, the others do not interest me except the 2nd, 4th, 6th, 1st, last, 9th, 7th, 3rd, 8th and 5th.

I will not dwell upon the "Science Questions and Answers" department except to say that it was absolutely wonderful, best I've ever seen, etc., etc.

Will not discuss at length the S. F. L. news—my own position being entirely too prominent therein. (Ahem, ahem.)

The Reader Speaks! I'm the reader in this letter; it's my letter, and if you don't like it what are you going to do about it? . . . .

Specifically answering Fred Anger's letter:

He's a poet.
He don't "no" it.
He *don't* show it.
WE don't *know* it.

I don't know what'sa matta wit' yo'all, Freddie. Whadda ya mean, anyway? You start sending bombs through the mails and I'll see that Hon. Dictator "Poy Cling Clong" Tucker is informed of it. You're getting into deep water, lad, when you start making insulting remarks about the grand and exalted order of SPWSSTFM; and that comes straight from the typewriter of Hon. Member No. 6, RCTRPDT (Royal Canal Tender of the Royal Palace of Dictator Tucker.) (We re-moted the palace with a canal. —B. T.) (Why?—Inmates.)

—.—. .— .—.. .—.. .. —. — —. —.. —.. — — — ...—. .—.— — (Calling D. Dovey): Cut in your mike, mug. Just a line to let you know that your missive was received and comments carefully noted. Besides being uninteresting, dry, absurd, and plain nuts, your lacrimose ending was most pitiful. String along with me, fella, and I'll show you thick and thin originality . . . . I was wondering, though, where'n'ell you ever learned code. Remember; they is some hams that read WONDER, and to them your pathetic attempt at humor via code (spelled: dah dit dah dit dah dah dah dah dit dit dit) was just so much poppy-cock. — .— — .—, —. ./ (Ta ta, D.)

And, Glory Be, if dat old Dictator, Hon. Bob Tucker, ain't done got anothe' lettah in WONDAH. Hoy, Bob; how ya? I agree with everything Bob—oops, pardon, I mean Dictator Tucker—says. You see, dear Ed, I've just got to. If I didn't Dictator Tucker might release me from my estimable position at *tender li canili*—Yea! might even have me shot every morning at sunrise, and then, of course, I wouldn't be worth a 'darn to tend *li canili*, nor my knitting, either. (Be careful, Dictator; I hoid the' was a revolution bein' Hatched along the *canili* in Mare Nostril.)

Request for the Baron—please. Don't tell us Mars is so far away that you can't get his messages even now. If this be so, then what's the use of the Short-Wave Researchers going to extremes and catching signals (loud and clear, mind you) from 'way out around Pluto? Now I S Q?

Milt Rothman's letter was very poor. His big mistake was in suggesting a sequel to "The Everlasting Bicycle" (or some such story) by Edmond Hamilton. That story needs no sequel, being complete the way it was. If you print a sequel to it, I won't buy another issue of WONDER until next month. I also disagree with Milt in his disagreement with Wollheim in his redisagreement with the editors. (Phewwweeee!)

Also disagree with Forrest J. Ackerman. Ditto to Newby Crowell.

I disagree with everybody! (Including the editors and even that scientinut Hatch.)

I want now to call your special attention to a letter contained in the April issue of WONDER which I resented very much . . . . A letter written by a young man who is well known to WONDER readers, but not otherwise . . . . A lad who used to pull legs off of flys . . . . A fellow who would give a man, dying of thirst, a peanutbutter cracker sandwich . . . . This gunch I am referring to is the one (and only—thank Heaven) Jack Schaller. Of all the silly, childish, purile, stupid, inane, senseless drivel to use to describe a single issue of a magazine—! It's certainly O.K. by me for a reader to praise an issue or a certain story; but when they go into opium-induced-like ecstasies over one of the poorest issues ever put out, then it's high time they were occupying a private cell in a sanitorium. Let me tell you, anyone who didn't even get a passing grade on the LEAGUE Exams has no business showing such petty partiality in his judgment, and I really don't think he is mentally competent. A swift kick on your rotund extremity from me, Jack. Love and XXXXXX.

I enjoyed the advertisements very much. One you didn't have this month, though, was "How To Die Gracefully In Ten Easy Lessons." Also missed that old standby, "How To Throw Money At the Birds, By Mail." I hope these will be back in their regular place next month.

And so, massa edituh, you will notice I have carefully refrained from giving my opinion on any of the stories in this issue. The other letter I wrote was disagreed with by almost everyone who was still in the Kindergarten; but this letter is disagreement-proof. If you don't believe it, just start sompin', an' then look out.

I ain't going to use any of the old tricks to get this in print. If you want to print it—and you'd better—why you just go right ahead.

(Sorry; we can't use it.—Ed.)

Say; what'n'ell's the use of me going to all the trouble to compose this masterful epistle if you ain't going to print it? (If you've heard this one, stop me.)

Well, I didn't read any of the stories this month, so far, because I wanted to give you my absolutely unprejudiced and unbiased opinion of the magazine itself, and not a jack schallercal anacanthous nepenthic monologue on why such-and-such by so-and-so was simply superb.

So, good-bye, old man; and don't take this letter too serious, or I may have to come up there and knock your ears down around your heels. You know I rilly dunt min hef wot I say, so don't be a dope all your life, you dope—get your salt shaker.

Yours till "The Object of My Affections" really prints "The Best In Science Fiction."

JOSEPH HATCH,
Lawrence, Kan.

P. S. (Later) I have just read "Pygmalions Spectacles," and though I have the utmost respect and enjoy greatly all of Mr. Weinbaum's stories, this one is too close in construction and similar in detail to "The Chamber of Life," by G. Peyton Wertenbacker to be merely, I think, an unintentional coincidence. You'd better watch your step, Mr. Weinbaum.

(The decrease in the purchase price of WONDER STORIES will in no way affect our authors—no way unfavorably, at least. We will continue to pay them at the same rates as we have been doing, and the quality of the material published will in no way be changed from what it would be if the magazine still cost a quarter per copy.

Your suggestions for improving our cover are radical enough, but we'd be afraid to take such a big step as leaving it entirely blank just to attract the curious. This wouldn't be fair to Paul, for one thing, and would not illustrate the nature of the magazine, unless we called the cover a snow-storm on Mars, or something. Don't you think that our present covers arouse the curiosity once in awhile?

Had we the audacity to make such a presumption, we'd consider the possibilities of Mr. Hatch having imbibed what is lovingly referred to as "a couple of beers," while writing this letter, or parts of it. He must have been in a very good mood, perhaps a little light-headed. We appreciate his attitude, which is typically American, and hope that his coined words —spingtumpers, gunch, etc.—and that southern Kansas accent of his will not give our readers any trouble. Have you been reading Milt Gross?—*EDITOR.)*

How to Read STF

Editor, WONDER STORIES:

I was certainly sorry to hear that E. C. Reynolds of the LEAGUE got only eleven petitions for science-fiction movies, since it seemed like a good idea to me. Maybe a blank put in the magazine would help. I know that a lot of people would scribble their names and addresses on coupons when they couldn't be bothered to think up what to say in a short letter. In regard to science movies, however, although I don't want to discourage those readers who are clamouring to see their favorite WONDER story on the screen, I would like to say that I'm afraid that, even if the petition came through, it would be a long time before any pictures came through with stories other than those which you fondly call hackneyed. In other words, they wouldn't go very far into it, and the plots would be only the very simplest and most straightforward, plots like those you are constantly turning down now as repetitious, about goofy old scientists and their beautiful daughters, and screwy little men from here and there landing in rockets and shooting up the place. And by the time the crust was broken, and they really started going into it, the cycle would be over. And there you are.

While we're on the subject of movies, I'd like to tell you how I read science-fiction—or any kind of fiction, for that matter. Say I'm starting a serial in the latest WONDER STORIES. For every character that comes up, I think of an actor, someone who could play the part on the screen. I keep this person in mind. If the story is a real good one, I write the names down. When I come to a piece of dialogue, I read it like that actor or actress would say it. It gives the character real individuality, and gives you a better picture of the proceedings. Also, it keeps me from confusing the characters, and I get twice the fun out of the story. Of course, the more players you know, the more fun the game is. If there are enough coming to your mind easily, you can find a suitable actor for any character you come across, however individualistic, or just plain nutty.

I want to say here that the only WONDER story I ever bothered to read completely more than once was "Dawn to Dusk." If scope of plot means anything to the value to a really good story, then "Dawn to Dusk" should be the greatest story ever published in book, magazine, or newspaper. Parts of it I have even bothered to memorize, parts sagacious enough to carry around and bear in mind as philosophies.

JACK DIETHER,
Vancouver, Canada.

(Up to date, E. C. Reynolds has received over a thousand petitions from our readers for more science-fiction movies, and he, with Forrest J. Ackerman, are talking "like Dutch uncles" to the producers about the ever-increasing public for this type of production.

We were surprised ourselves at the wisdom contained in Eando Binder's "Dawn to Dusk," and certainly feel that it is far above the average run of science-fiction story. It should some day make an excellent book.—*EDITOR.)*

A Breezy Letter

Editor, WONDER STORIES:

1st—Orchids, forget-me-nots, and many thanks to the editor for publishing my lengthy letter of last Dec. Because of its bulk it was unexpected. However, it will probably spoil me because I'll do like most of the other monkeys from now on and write for the mere purpose of seeing my name in print. All chaffing aside, it was an agreeable surprise; apologies to you for its length and tnz agn even though it may be the death of me. Kellerfans of the Twin Cities will undoubtedly unearth my address and take up residence on my doorstep, with much delight and a profusion of dead cats. As you so politely intimated in your footnote to my letter, I am in for assault, slander, and an attack of housemaid's knee. So long as I can "take 'em" one at a time, you'll see me give a good account of myself.

2nd—Enclosed please find thirty cents in coin of the realm, and two applications that are self explanatory. We finally succeeded in doing it.

3rd—Allow me to, if you please, vociferously proclaim and announce that the SFPCDOSTFM (Society for Portland Cement Binding on Science Fiction Magazines) has acquired a zealous and active if necessarily undistinguished new member. My personable dealer of the newsstands has eagerly agreed, beginning with the June issue, to supply the required trowels, forms, chalkline, etc., and throw in, at no extra charge, a five pound sack of the purest, whitest, and most cohesive limestone Portland obtainable from only New England's rock-ribbed mountains. And with each and every extra copy of your famous and widely read periodical he gives away, absolutely free, a genuine 14 karat solid gold, non-leakable, scratch-proof, fountain pen, and one little gold plated mechanical bug that goes hobbling, wobbling, across the desk, in the most peculiah manneh, much to the amusement of the old as well as the young. There isn't a particle, not a shred of a doubt in my mind (someone is sure to say: has he got a mind) that there are a great many pipphle who would derive huge enjoyment in physically and forcibly taking me apart and then practising various unmentionable indecencies on my undistinguishable remains. FLASH—Hook a brace or two of old style Ford spark coils to your telephone system and then call me up.

4th—The editors subject us to some more of their occult hand passing in financial mesmerics. Feb. issue, page 1130. "Your dream come true." Are we Trilbys to be Svengalied once again? Isn't it enough that we are bilked every month out of a quarter-dollar? You are hanging out the Indian sign on us as it is. But with the old gypsy touch you expect to rook us twice. Hand passing???? The Greeks had a better word for it. You want a doubled circulation so as to attract more hard advertising cash. It's a pecuniary stand to take but not an unworthy one until you expect and practically demand that the readers do it for you. That's insult added to injury almost. We realize that you are doing much to give us more and better stories, but are you doing all you can? Just double the value of your reading matter and the readers won't have to be "black-jacked" into peddling copies of W.S. on the street corner. Can't be done, you say. Well that's a lotta hokey. There is an illimitable field of authors on the outside of your regular clique that can handle this stuff very nicely. This month's issue I notice P. B. Maxon, so perhaps the suggestion comes too late. Senor Gernsback realizes this. Personally I know him from one experience of several years back and know that he is a very clever brave. One of these gents that you'll never fool with a loaded cigar. But I fear that he casts a sorrowing eye at his purse and the quantity of snippable coupons on the bonds of Continental Publications, Inc.

5th—I shrink like a woolen undershirt from this painful performance. M. Paul has executed one of his famous and well-known about-faces. Reversal with a vengeance. Altho his superb illustrations of futuristic cities and detailed mechanisms have never failed to thrill me over a period of many years, nevertheless I must point the sarcastic and accusing finger of ridicule at his latest and most blatant disfiguration. Again I repeat that not being an artist I'm not really qualified to act as critic, but that glaring delusion for March on page 1190 knocks us for a loop. It is certainly not a Rubens. Nor a Rembrandt. Neither could you mistake it for a Murillo, Velasquez, Meissonier, or Corregio. Even Bud Fisher, McManus, or Jefferson Machamer could not do one like that. Only in the depths of a disordered and deranged mind could such a depiction have been conceived. Perhaps Mr. Paul had a slight fever. It assaults all of our ocular faculties. It gives the retina jim jams, willies, and cholera morbus. Possibly Frank indulged in an overdose of defective wassail. On our fair city's forces of law and order, they brag, and not without reason,

of some very mean looking physiogs of the Hibernian pattern. From time to time it's been my privilege to sort of rub elbows with these official kill-joys, in an unoffishul capacity, of course. Whenever in a hurry to motor anywhere, they appear overjoyed to make your acquaintance. They are everready to cast a legal gloom over an otherwise friendly and strictly personal brawl. They are also the world's worst when it comes to criticism of brew joint tenor harmony. Never in my many years of close association with them have I seen a harness bull with an expression on his mug like that of Paul's. Perhaps Mr. Paul has no more use for the polizei than I have, and so attempts to disparage them by cartooning. The insipid appearance on the lugs of the other three occupants of the cell lead me to believe that they were spawned in the tormented and disintegrating gray matter of a heroin addict. More illustrations like this one? No. NO I say. NO with ump-foosis. And a plethora of underscoring on the ump-foosis. With the combined and concentrated effort of ten hundred thousand bull saxophones fortissimo again I say NO.

6th—The order for the evening is brew. Oh me. Oh my. I am gay. I am happy. I rhapsodize.

Beer, beer. Divine and beauteous beer. How I love to hear you go splashing down my gullet with your rhythmic gurgle, gurgle. How I love those little salted and twisted loops that I can dunk in your topaz depths. Your crown of foam pales into insignificance the regal froth of Neptune's storm-lashed boundaries.

The desire to swill and guzzle you is as luring as the chant of the sirens to the Argonauts. Dearer to mine sight than all the treasure and gems of Ophir are your tiny ever-rising beads of iridescent scintillation. I shall direct my uncertain but eager footsteps to yon corner bar to see if peradventure a dozen or so Seidl of lagered ichor do not await me there. I have a dryness this evening. I have an acute and unquenchable gusto. I have an arid and barren esophagus that chants to the tune and harmony of brewery strains, and yearns to hear further chords from the mystic and unknown realms of malt, hops, and effervescence, that wondrous trio that sang together in the dim dawn of creation, prophesying and predicting for me; beer, in melodies of provident splendor. How beautiful is the cosmos when rushing atom meets the open arms of waiting atom, and they waltz together, tripping with fairy feet, along the shores of the nervous system, and skip happily over a river of alcoholic juices. How joyous the soul when they gayly join hands and in unison perform a dervish ballet in the upper reaches of the cerebrum and the intellect impulsively responds to their frenzy. We feel a new and insidious influence creeping along our spine from our positive to our negative pole but lack the spirit to resist that disintegrating and overpowering invasion of our consciousness that cometh stealing upon us as a thief in the night. Well, we finally have more under our belt than our undershirt.

Edw. R. Manthey,
St. Paul, Minn.

(You are fast getting yourself into that exclusive circle of fan-writers whom our readers look for in every issue. Your style of composition leads us to believe that you might make a good author—perhaps of the Stanley G. Weinbaum variety.

You and your wife have duly been made members of the Science Fiction League.

Your fourth paragraph loses a lot of weight since we have reduced the price of the magazine. What have you got to say now?

We take it from your sixth remark that you have considerable affection for beer. As for us, you should see the havoc we can wreak with a 100-proof malted milk. And when we're in a particularly devilish mood, we throw in a dash of ice cream.—*EDITOR.)*

Mr. Arcier Retaliates

Editor, WONDER STORIES:

You may not be as outspoken as the Australian editors, but your implication was quite evident, and it hurt—as you meant it to do.

I don't think it was fair—you should have printed the whole letter—not the excerpts. I was condemning—to be sure—but cogently memorizing, you will find that I didn't abrade because I'm a moronic crank—or for the joy of "riding" you—but because I want a magazine that has fallen into the ruts of sloven care to perk up, to take the lead it once had—to be the original WONDER STORIES—the Best in Science Fiction!

In reading the list of stories you rejected, in the WONDER STORIES dedication of Fantasy Magazine, I see why WONDER STORIES has slipped, why it is no longer a quality magazine.

Why? Because, Mr. Gernsback, you stick too close to facts—because you tie your authors to a one-way path of dry, scientific, uninteresting stories to your editorial door, because you won't give your authors a chance to write—to *really* write, Mr. Gernsback. The readers do not want a mass of dialogue and descriptions—they want action—they want new heroes—not the blood-and-thunder kind—they want to roam the cosmos—untangle nature's inexplicable dimensions—get away from this drab, dust mote—they want life in their stories—not stilted machinations of an author that has to keep his science severe in order to have his story published.

That is what we readers want, Mr. Gernsback, and it is what you will have to give us—if you want to regain the lead you once had.

You can't keep up a false front for long, Mr. Gernsback—the readers will someday revolt, and when they do—WONDER STORIES either goes into oblivion or gets a new editorial staff.

And do you know how the stories you rejected fared? Nearly all of them were judged as good or very good by Fantasy Magazine, "The Voice of the Scientifiction Fans."

And after being the first editor to publish a science-fiction story by E. E. Smith, you reject his "Triplanetary," which received only the greatest of acclaim from the readers when it was published.

And after giving us stories like "The Metal Emperor," "Skylark of Space," "Green Splotches," "Tarrano the Conqueror," and others, you have the gall to give us stories like "The Black River," "Thieves from Isot," "House of Monstrosities," "The Final Struggle,"—oh, well, what's the use? It goes in one ear and out the other.

I may be judged as a moronic crank, but I know when I'm right—there's nothing moronic in arguing for your rights, is there?

I've stuck to your magazine through thick and thin—defended it and you against caustic remarks by my friends who call me bugs and the magazine crazy. I've sold the magazine to friends in high school, have taken material from it for physics and chemistry—so don't you think I've got a right to speak up when I think the magazine is slipping—? I've got every issue bound and safely locked. Six volumes—six years.

I may sound harsh, but I intend it only as constructive criticism. There isn't a person in my town who is more enthusiastic about science-fiction than I am—or more fanatic, I should say—for I literally eat anything that savors of science-fiction. And my favorite mag is WONDER STORIES—was—and always shall be—for I grew up with it.

Please print this, Mr. Gernsback, and get the readers' comments on it. Come on, you science-fiction fans—speak for your rights. Lift WONDER STORIES up—up—way up—don't stop!—lift up—.

Joe Arcier,
Torrington, Conn.

(We are certainly sorry if anything in our answer to your previous letter *hurt* you, and want to take this opportunity to extend our sincere apologies. We assure you that we had no such intentions. However, it is never possible to predict just how people will take things, and all we can do is apologize when it is received at the wrong slant.

As far as we can remember, your letter was printed word for word without deletions as you submitted it to us. We do not make it a practice to publish only excerpts and are sure that nothing like this could have happened to your missive. It is possible that a few irrelevant sentences may have been left out because of lack of space, but nothing essential to the general trend of the letter.

We must challenge your statement that we stick too close to facts. We stick only to logic, which is fact, in a way—and you can't stick too close to that. If you don't, you do not have science-fiction at all, but juvenile fairy tales. You certainly wouldn't want to have our stories disregard known facts of science and contradict them. The magazine is supposed to contain *some* good science. One of our best, if not our best, authors, Laurence Manning, insists that all of his science-fiction will always go to WONDER STORIES as long as we continue to let the authors

write in their own way—and not to formula, as other mags do.

You state that nearly all of the stories we rejected that were sold to our competitors were rated good and very good by Fantasy Magazine. We certainly cannot accept every good story submitted to us—it has to be more than that. If we took every good story, we should soon become overstocked for years in advance, and thereby block the market. Remember also that the ratings in Fantasy Magazine are compiled by five or six fans, and do not necessarily reflect the opinions of the majority.

We would not say that "Triplanetary" received the *greatest* of acclaim from the readers. We could give you the names of several very prominent fans who did not think it was up to Smith's standard.

We are contemplating issuing 10,000 rubber stamps to the first 10,000 readers requesting them, on which will be found the words "'House of Monstrosities,' and 'The Final Struggle' were terrible. How dare you print such rubbish?" That will save them some effort when writing letters to this department.

We are very glad that the magazine has helped you so much in your studies and are sure that that fact helps to ease the effect of our recent depreciation upon you.

Perhaps you do not realize that we have received many letters from other readers—just as vehement as yours—also claiming that we have degenerated, but, strangely enough, are perfectly satisfied with the things you kick about and complain about the points that please you. Now, just what is the editor supposed to do?—*EDITOR.)*

Short and Not Sweet

Editor, WONDER STORIES:

Scallions!

ED. CAMILLE,
Erie, Pa.

(We can't imagine what these scallions are for, but the reader has made no hesitation to get to the point. Perhaps he does not like our recent reduction in price.—*EDITOR.)*

On the Price Drop

Editor, WONDER STORIES:

This is my first letter to your magazine, although I have been reading it for over a year.

Boy, oh boy!—did I get a surprise when I went to the newsstand to pay 25c for your mag and found out that the price had been lowered to 15c! In 1933 when you lowered the price, you also lowered the quality of the magazine, but this time it hasn't been lowered one particle. I hope this new price brings you many new readers.

The other day a friend of mine came over to the house and when he left, I gave him a few copies of WONDER STORIES that I had duplicated. He liked the magazine but he didn't want to put out 25c on one magazine, so he buys 10c and 15c western and other action-filled stories, but I am going over to see him again and tell him the good news and I'm sure you will have another new reader.

As for the mag itself, it gives you the best authors, the best stories, and the best illustrations and now for the least price. Before, when the magazine was 25c, the readers had a right to throw brick-bats at the size of the magazine and even edges, but now just let me see somebody crab about these things—let me see 'em!

I have just sent my application to join the SCIENCE FICTION LEAGUE. Here's hoping I'm member 1000.

STANLEY EARL HUTCHINSON,
Culver City, Calif.

P.S. Paul is the best artist that has ever drawn scientifiction. Hang on to him. I wish you much success in the future.

(We are glad that you can now convince your friend that his science-fiction will cost him no more than the western and action stories he is reading. In fact, we feel that this is an excellent time for all of our readers to introduce the magazine to new friends and potential fans. The new price is an added argument for our side.

We certainly hope that the reduced cost will not stop fans from sending in their brickbats. We enjoy receiving them as much, if not more, than the compliments.—*EDITOR.)*

Back from Mars

Editor, WONDER STORIES:

I have just returned from a trip to Mars. I certainly was glad (happy?) to get back to my restful easy chair and pore (pour, poor?) over my good old W. S. And 15c, too! Well! Well!

Mr. Editor (editer?) I think you'd like it on Mars. Anyway we readers would like you to be there. You know, the Savages on Mars are "feet hunters." They look down on earthly "head hunters." They have good reasons for hunting feet too.

Interviewing one of the chiefs on the subject, I received the following information. Quoting the chief: "A man has only one head, but he has two feet. Two feet will go much farther than one head. Besides that, we get two for the price of one. Economy, what?"

Anyway, Mr. Editor, don't give up. Your magazine really isn't *much* worse than it looks.

DR. ELLIS PENTHOUSE SWASHBUCKLE,
—courtesy James Rogers,
Muskogee, Okla.

(We hope you enjoyed your trip to Mars [Ma's?] although your findings have completely disillusioned us. We thought that the Martians had two *heads* and one *foot!* Then they could still be head hunters and get two for the price of one.

So you readers would like for us to be there, eh? Just how should we take that—as a hint?—*EDITOR.)*

The Chain (Letter) Gang

Editor, WONDER STORIES:

I wish to have this warning published in the LEAGUE department.

Members of the SCIENCE FICTION LEAGUE or any person whose name and address is published in prominent magazines are vulnerable to letters from the so-called prosperity clubs. These clubs are composed of people who have received a chain letter requesting the person to send a dime to the name at the top of the list, erase the top name and add his own name to the bottom. The person is then supposed to send a copy of this letter to five friends, and as his name leaves the top of the list, he is told that he will receive 15,000 dimes.

Now, I am too old to believe in Santa Clause and I wish to inform any person who gets my name and address from these pages that I will *not* contribute any dimes to this type of get-rich-quick scheme. I strongly advise any member of the SCIENCE FICTION LEAGUE to disregard these letters.

Up till this time, I have received several of these letters and if I sent a dime to each one, it would be quite a sum of money.

Mr. Leroy C. Bashore had a very good suggestion in the June issue. I think that you should have a contributor's column in which members could contribute interesting scientific facts and oddities.

ROBERT H. ANGLIN,
Danville, Va.

(We are afraid that your warning has come too late. Or rather, it will be too late by the time this is published. The dime—also quarter and dollar—chain letters will most likely have run about as far as they will by this time. It is certainly destined to a short life.

Of course, there is no doubt that many people have made quite handsome profits in this way—those who got into it early—from others whom Barnum said are born every minute. Theoretically, it works perfectly—but it is quite another thing from a practical standpoint. While the scheme is very logical, it is also illogical to suppose that everyone in the country can secure $1,562.50 for the cost of one dime. Where is all this money coming from? Furthermore, there are not enough stamps in the country to mail the letters and dimes, and if the thing worked out to a finish—everyone following the directions in the letters—everyone *would*, of course, receive the $1,562.50, *meanwhile* sending out 15,625 dimes, so the only one to profit would be the post office. We certainly believe it a very narrow act to respond to these silly chain letters. Our first dime came in the other day.

Mr. Bashore's suggestion has been discussed in the LEAGUE department. Such a contributor's column would be impractical because of the lack of space. —*EDITOR.)*

Into the Earth

Editor, WONDER STORIES:

In a few days I'll be a great man, even greater than Einstein! I am making my second trip into the core of the Earth with the aid of my trusty pick and shovel. In my first successful tour, I delved 300 miles beneath the surface and found an unbelievable race of people with an intelligence greater than ours. Every person of that race was a double of a person on Earth!! I couldn't fine a double for Mr. Kaletsky and on asking an information bureau, I found that they didn't keep dogs.

Imagine my astonishment when I found future copies of WONDER STORIES being read. I quickly collected them all and started to read them copy by copy. They were a little different than they are now and on examining them closer I observed that the edges were even, the type was clear and readable, etc. But the most noticeable change was that Coblentz and Weinbaum had a story in every copy. How I dreaded to come back to the surface where civilization has just begun.

Enough for my description of this colossal trip. In my second trip, I will take with me all people without a sense of humor and I might take you, editor, if you don't show me you will print more stories like "The Brain-Eaters of Pluto" and "A Suitor by Proxy."

Before I forget, I also met the double of you and he claims that you will alter your magazine in the June 1935 copy (I hope he is right).

Hark! I hear people coming to my palace. Maybe they have found out about my trip and they have come to congratulate me. Funny. They have uniforms and caps with a word something like "Keeper." What can they want? I won't tarry longer, but I shall jump on my invisible horse and speed away as fast as light.

Onward, Napoleon, to Waterloo!

KENNETH MOSKAL,
Chicago, Ill.

(We'll be glad to go with you to the center of the earth—it's been rather chilly here of late, anyway—and visit our "double."

You will notice that we *did* make a change with our June, 1935 number—the reduction in price—and your prediction was therefore true.

Tell us all about Waterloo in your next letter. —*EDITOR.)*

Overlapping Serials

Editor, WONDER STORIES:

"In Caverns Below" is the best story you've published this year. Coblentz is a master of satire; I hope to see many more of his stories.

Why must you have the serials overlap; for instance, in the May issue there are only three complete stories, totaling about thirty-four pages.

The continued stories take up about two-thirds of the space. Why not run a serial for three issues and then start a new one, in the next issue? This way we could have another complete story in place of the second serial.

If you must drag in science-fiction mysteries, I'd much rather see stories of Taine and Craig Kennedy by Keller and Arthur B. Reeve. Reeve can pack plenty of science into his stories.

"The Moaning Lily" is an interesting story, but hardly science-fiction. My favorites are stories of interplanetary adventure and time-travel, and I'd sure like to see more of them.

The only good artist you have is Paul and his inside illustrations are too dark. Couldn't you get Wesso to do some of the illustrations? The only artists I consider his equals are Dold and Paul.

Miller's idea of publishing a complete biography is great.

Is the story by Garret Smith, "Between Worlds," you published in book form, still available?

C. E. MCGONICLE III,
Lowell, Mass.

(We find that overlapping serials sustain a lively interest in the magazine that would be missing otherwise, and one way or the other, you receive just as much science-fiction.

"The Moaning Lily" was certainly science-fiction—it contained some excellent botany—but it had a weird atmosphere. We do not use many stories of this nature.

"Between Worlds" is still available, for 50c per copy, from our subscription department.—*EDITOR.)*

Looking Back

Editor, WONDER STORIES:

Having remained entirely quiescent for the last eight years as to writing to scientific fiction magazines, an abnormal spurt this morning behooves me to, in my crude scrawl, scribble a wee mite—if I may be so bold.

First of all, may I say that yesterday I received a very nice note from Wm. Dellenback asking my presence at the second meeting of the Chicago Chapter of the SCIENCE FICTION LEAGUE to which yours truly is surely going to hie himself. No foolin', from now on, I'm going to take more interest in science-fiction, and begin to get some real enjoyment out of it instead of drowsily taking all for granted.

Looking back over the files of SCIENCE WONDER, AIR WONDER, and your present publication, may I get rid of a dot of orchids and a few digs which have been getting under my skin?

"The Ark of the Covenant," by MacClure. That was a really good full-length story. Highly plausible, the old human interest, a fine story to begin a new magazine on. What has happened to MacClure? "The Flying Legion" by George Allan England was another honey. Remember your article by Max Valier entitled "Berlin to New York in One Hour?" That was really a good kick. Why not run articles like that more frequently to add more practical interest to such a thing, thereby speeding its development.

Ed., when you read a story like "The Marble Virgin" by Kenny McDowd, how would it be for you to prologue the story by giving *your* reason why such 1860 melodrama gone futuristic can be printed? Good old Jack Williamson with "The Alien Intelligence." "The Super Velocitor" by S. C. Carpenter was good and different. "The Final War" by Carl Spohr—the *finest* anti-war story you've ever published. I've read it over and over again. "The Planet of Youth" with the usual Coblentz satire rated fine. That boy Coblentz hits the old apple.

"Revolt of the Scientists" by Schachner was satisfying. Had some good present-day lessons which should be heeded. How about Charles Cloukey and Gawain Edwards and many others coming back to the pages? "The Inquisition of 6061" by A. F. Jones struck me as being of a goofy nature. So disconnected and—well, out of place. "The Exile of the Skies," is one of the finest stories it has been my pleasure to read. Knute Savary really was a man. How about more from Richard Vaughan? "The Sublime Vigil" is probably the most human and beautiful story you've published, Ed. Again, good old Williamson for "Xandulu." "In Caverns Below" is starting very well.

The two best stories in the Quarterly were "Emissaries of Space" and "Vandals of the Void."

The general average of the magazine is quite a good level and is definitely rising. The introduction of the SCIENCE FICTION LEAGUE of course has brought the Ed. and readers far closer and the readers between themselves.

You're not far from the top, Ed., so keep it up and you'll strike it soon. Of course, I realize why the pages aren't trimmed, but nevertheless I'm waiting for them to be.

Ed., don't you think a quarterly would sorta hit the spot for all those *full size* thick magazines at four bits per fan? C'mon Ed., come across. I almost think a quarterly would shoo the depression.

By the way, before I close, please ask Paul to take it easy on the monstrosity covers. Front the magazine so that it would be more explanatory, not so that a potential new reader sees it and thinks Nightmare Stories. Take a long look at the April cover. We dyed-in-the-wool fans know what to expect and how to interpret the cover, but a new reader—wow!!!

BOB HULTEN,
Chicago, Ill.

(You are certainly a lucky member of the LEAGUE to be able to attend meetings of the Chicago Chapter, which is by far the most active and largest.

As a rule lately, we do not print letters that merely state which stories the reader liked or did not like, because a lot of these make the old column boring, but your letter is different in the manner that you criticize stories that appeared five and six years ago, many of which our newer readers have not even heard of.

Your letter was written before our reduction in price.—*EDITOR.)*

A Vivid Imagination

Editor, WONDER STORIES:

From a perusal of recent copies of WONDER STORIES, I predict a rapidly increasing circulation for your worthy publication. Certainly this will occur unless you revise your present editorial policy and give your readers an inferior class of stories.

Your covers are fascinating and actually act as a salesman on the newsstand. This is accomplished by your famous artist, Paul. Keep Paul for your cover paintings, as he always does a good job. Schneeman can do your inside illustrations fairly well.

The best ten stories in your last four issues, in my opinion, are as follows:

1. "The Robot Aliens"
2. "The Hidden Colony"
3. "The Life Detour"
4. "In Caverns Below"
5. "Pigments is Pigments"
6. "The Elixir of Progress"
7. "Phantom Monsters"
8. "The Insect World"
9. "The Waltz of Death"
10. "The Living Machine"

These are my favorite ten stories in the past four issues. What are yours?

I have just finished reading the May issue of WONDER STORIES and it was very interesting and entertaining. This issue contains one story by my most favorite author—David H. Keller. "The Living Machine," by our famous Doctor Keller, is a very interesting story, which gives a good mental picture of what might occur in the future. This Keller is sure a good fellow! WONDER STORIES is very fortunate to have this author write so regularly for their magazine. Dr. Keller's talent as a writer is backed up by his long experience as a physician and psychologist. We should consider ourselves very fortunate to be able to read stories by this intelligent and worthy writer. I congratulate Dr. Keller for his excellent stories, and I hope to read many more by this great writer, whom I call WONDER STORIES' Superb-Writer.

"Disembodied Thought," the editorial by Hugo Gernsback, was very interesting and educational. I agree with his theories. Just very recently I wrote an article about robots, to express my opinions and to show my points. Mr. Hugo Gernsback's editorials are always interesting and educational, and I take great pleasure in reading his well-described and well-written editorials.

I prefer literature that not only entertains, but also informs and makes one think. WONDER STORIES does this for me, and that's why I read this worthy publication.

Taking into consideration the great scientific progress that is being made throughout the entire world, we can easily see that many of WONDER STORIES' stories will come true and actually occur in the far future.

Recent improvements in giant telescopes promise us some fresh astronomical close-ups with more astounding sights of matter's magnificent array. It is quite incorrect to suppose that we know everything about our next-door neighbors of the solar system. Saturn is not merely a striped globe whose shadow "sleeps on his luminous ring." It has suddenly produced a huge white spot which the astronomers are discussing. The belts of Jupiter's ruddy bulk are always changing color. The melting snow-caps of Mars seem to obey the law of the seasons.

Our nearest world, the moon, is about 239,000 miles distant from the earth. So what it lacks in size it makes up in sociability. One glimpse at it through a high-power telescope is unforgettable. Its beauty is dazzling, literally ablaze with the reflected light of the sun, while the dark reflections here and there are the shadows of peaks, some nearly 20,000 feet in height, thrown far across the lunar plains as the orb majestically turns in its orbit. To watch dawn and night steal over those vast dead ranges on which no human foot has ever trodden is as strangely moving as though it were a ghost visiting this world after it, too, had died.

The universe is a closed book, yet to be opened. But it will be opened, even if we must pry it open. These so-called "miracles" will come true in the future and our future civilizations will go through strange and wonderful experiences.

I need science-fiction. I must read it. I crave it. It acts on me just like dope does to a dope addict. He craves and needs it. Science-fiction is my great assurance of rest, and makes me forget my troubles. WONDER STORIES gives me peace, contentment, and many long hours of enjoyment. That's my dope!—and how it satisfies!

Three letters which appeared under "The Reader Speaks," in the May issue of WONDER STORIES, were of great interest to me.

The letter by Andrew Lenard, titled: "Science Fiction in Europe" was very interesting. I enjoy his letters because he speaks "straight from the shoulder." His letters are always well-written and educational. He is very kind and honest by saying that the American people are more youthful than Europeans, and take more quickly to science-fiction. I congratulate Mr. Lenard for the excellent letters which he writes, and I hope to read many more by this worthy, active science-fiction fan. I would like to see Mr. Lenard write science-fiction stories some day.

The second letter which was quite interesting, was the one by Montgomery Mulford, titled: "Strange Truths." This was a very unusual letter, and he presented us with much interesting and strange information. I always enjoy reading such letters, and hope to read more by Mr. Mulford.

The other letter which interested me was the one by Henry Hasse, titled: "A Good Deception." The procedure of his experiment is very interesting, but I don't believe the results would be so interesting! I believe that the editor's explanation of this experiment is correct.

I am very glad to see that you science-fiction fans are helping Mr. Reynolds in science-fiction movie projects. Stick to him, and his project will soon be accomplished.

Do you readers know that there is a great stf. war war going on between the SPWSSTFM and the IAOPUMUMFSTFPUSA? The former organization doesn't want to use the wire-staples to hold science-fiction magazines together, but wishes to use a chewing-gum staple. The latter wishes to use the metal ic staple, which is now used. Which do you readers want to use to hold our science-fiction magazines together?

Why are these "cranks" trying to ruin the good reputation of worthy WONDER STORIES? If you readers receive any letters from these "cranks," who say all kinds of drastic things about WONDER STORIES, just forget about them, as their statements are not true. We are with you, Mr. Hornig! A certain well-known active science-fiction "fan" almost succeeded in making me believe the things he told me about WONDER STORIES, but I know better now and I am still for WONDER STORIES, and WONDER STORIES for me. So, you readers know what to do if you receive any letters from these "cranks." These "cranks" are a disgrace to the great progress of our worthy science-fiction.

I congratulate the SCIENCE FICTION LEAGUE for the great progress it made in its first year of existence. May the SFL attain still greater success and progress in its second year. I am trying to have the SFL advertised in a theater, and I think I will soon have this accomplished.

This was a rather lengthy letter, but I wished to bring a few points out, and I think this letter will interest your readers.

WONDER STORIES and the SCIENCE FICTION LEAGUE are doing all that they possibly can do for the advancement and betterment of science-fiction, so let's all be faithful to them.

And may I conclude that WONDER STORIES is the best of its kind on the market—in fact, the *only* of its kind!

LEROY CHRISTIAN BASHORE,
SFL Active Member 567,
Lebanon, Pa.

(It certainly is quite incorrect to suppose that we know everything about our next-door neighbors of the solar system. We know practically nothing about them, and any astronomer will admit that. We li your statement about the sociability of the moon.

Your racket with Ackerman is certainly interesting, and we are glad that you told us all about it. You can take our word that we will keep it a deep, dark secret.

Thank you for your paragraph about the "cranks" who are trying to harm WONDER STORIES. Some people just can't stand to see others succeed.—*EDITOR.*)

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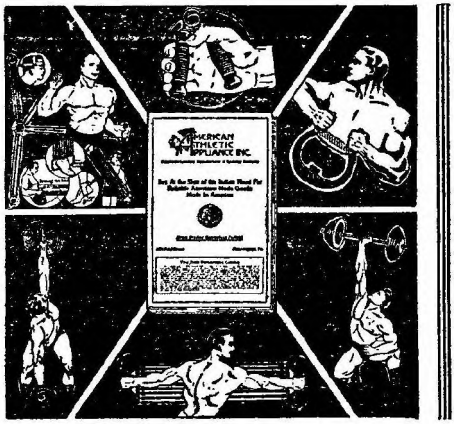

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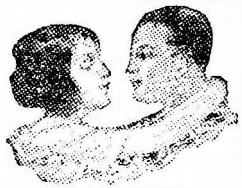

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Not a "Gadget"— Not a "Knick-Knack"—

but a valuable, proved device which has been sold successfully by business novices as well as seasoned veterans.

Make no mistake—this is no novelty—no flimsy creation which the inventor hopes to put on the market. You probably have seen nothing like it yet—perhaps never dreamed of the existence of such a device—yet it has already been used by corporations of outstanding prominence—by dealers of great corporations—by their branches—by doctors, newspapers, publishers—schools—hospitals, etc., etc., and by thousands of small business men. You don't have to convince a man that he should use an electric bulb to light his office instead of a gas lamp. Nor do you have to sell the same business man the idea that some day he may need something like this invention. The need is already there—the money is usually being spent right at that very moment—and the desirability of saving the greatest part of this expense is obvious immediately.

Some of the Savings You Can Show

You walk into an office and put down before your prospect a letter from a sales organization showing that they did work in their own office for $11 which formerly could have cost them over $200. A building supply corporation pays our man $70, whereas the bill could have been for $1,400! An automobile dealer pays our representative $15, whereas the expense could have been over $1,000. A department store has expense of $88.60, possible cost if done outside the business being well over $2,000. And so on. We could not possibly list all cases here. These are just a few of the many actual cases which we place in your hands to work with. Practically every line of business and every section of the country is represented by these field reports which **hammer** across dazzling, convincing money-saving opportunities which hardly any business man can fail to understand.

Profits Typical of the Young, Growing Industry

Going into this business is not like selling something offered in every grocery, drug or department store. For instance, when you take a $7.50 order, as much as $5.83 may be your share. On $1,500 worth of business, your share may be $1,167.00. The very least you get as your part of every dollar's worth of business you do is 47 cents—on ten dollars' worth $6.70, on a hundred dollars' worth $67.00—in other words two thirds of every order you get is yours. Not only on the first order—but on repeat orders—and you have the opportunity of earning an even larger percentage.

This Business Has Nothing to Do With House to House Canvassing

Nor do you have to know anything about high-pressure selling. "Selling" is unnecessary in the ordinary sense of the word. Instead of hammering away at the customer and trying to "force" a sale, you make a dignified, business-like call, leave the installation—whatever size the customer says he will accept—at our risk, let the customer sell himself after the device is in and working. This does away with the need for pressure on the customer—it eliminates the handicap of trying to get the money before the customer has really convinced himself 100%. You simply tell what you offer, showing proof of success in that customer's particular line of business. Then leave the invention without a dollar down. It starts working at once. In a few short days, the installation has actually produced enough cash money to pay for the deal, with profits above the investment coming in at the same time. You then call back, collect your money. Nothing is so convincing as our offer to let results speak for themselves without risk to the customer! While others fail to get even a hearing, our men are making sales running into the hundreds. They have received the attention of the largest firms in the country, and sold to the smallest businesses by the thousands.

EARNINGS

One man in California earned over $1,600 per month for three months—close to $5,000 in 90 days' time. Another writes from Delaware—"Since I have been operating (just a little less than a month of actual selling) and not the full day at that, because I have been getting organized and had to spend at least half the day in the office; counting what I have sold outright and on trial, I have made just a little in excess of one thousand dollars profit for one month." A Georgia man made $802.50 his first two weeks. A Connecticut man writes he has made $55.00 in a single day's time. Texas man nets over $300 in less than a week's time. Space does not permit mentioning here more than these few random cases. However, they are sufficient to indicate that the worthwhile future in this business is coupled with immediate earnings for the right kind of man. One man with us has already made over a thousand sales on which his earnings ran from $5 to $60 per sale and more. A great deal of this business was repeat business. Yet he had never done anything like this before coming with us. That is the kind of opportunity this business offers. The fact that this business has attracted to it such business men as former bankers, executives of businesses—men who demand only the highest type of opportunity and income—gives a fairly good picture of the kind of business this is. Our door is open, however, to the young man looking for the right field in which to make his start and develop his future.

No Money Need Be Risked

In trying this business out. You can measure the possibilities and not be out a dollar. **If you are looking for a business that is not overcrowded**—a business that is just coming into its own—on the upgrade, instead of the downgrade—a business that offers the buyer relief from a burdensome, but unavoidable expense—a business that has a prospect practically in every office, store, or factory into which you can set foot—regardless of size—**that is a necessity** but does not have any price cutting to contend with as other necessities do—that because you control the sales in exclusive territory is your own business—**that pays more on some individual sales than many men make in a week and sometimes in a month's time**—if such a business looks as if it is worth investigating, **get in touch with us at once for** the rights in your territory—don't delay—because the chances are that if you do wait, someone else will have written to us in the meantime—and if it turns out that you were the better man—we'd both be sorry. So for convenience, **use the coupon below**—but send it right away—or wire if you wish. But do it now. **Address**

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