JULY

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JULES VERNE'S TOMBSTONE AT AMIENS PORTRAYING HIS IMMORTALITY

AMAZING STORIES

Scientific Fiction

Vol. 5 July, 1930 No. 4

In Our Next Issue

SKYLARK THREE, by Edward E. Smith, Ph.D. (A Serial in three parts.) Part I. Just about two years ago—specifically two years ago in the August issue—we began that much lauded story, "The Skylark of Space." Since that story was completed there were innumerable requests for a sequel. Beginning with the next issue—August—we begin the sequel in a serial in three parts. "Skylark Three" is more magnificent, swifter and more thrilling than the other. We suggest that you order your magazines now to make sure you get them.

WORLD ATAVISM, by Edmond Hamilton. We know that the sun's rays play an all-important part in life processes, and in the present story it is taken that they are constantly improving and evolving a higher race of man. In this short story, Mr. Hamilton uses, for him, an unusual theme, which he weaves dexterously into a tale of considerable importance.

THE INFERIORITY COMPLEX, by Miles J. Breuer, M.D. According to the views of some of us, a great many complacent people would be better off if they had a strong infusion of the inferiority complex given to them. Here we have an eminent authority giving us a wonderful bit of fantasy based on higher physiological and psychical science. This story is not only a romance of literary value, but is really a treatise on various complexes of human mentality.

THE LAST WAR, by Capt. S. P. Meek, U. S. A. Who should be more authorized to write a story on the wars of the future than an army man? Capt. Meek is an army man. He has evolved a most ingenious treatise on what man may do in the future to conquer nations. It seems almost prophetic.

SOUTH POLE BERYLLIUM, LIMITED, by Peter van Dresser. Beryllium is a metallic base of the emerald and it is a metal which bids fair to enter into industry, in a sense, the last development in metallurgy, or about to be such. Admiral Byrd, establishing himself at the South Pole, mapped those almost unknown regions, so that the Antarctic is now familiar to us. This story is particularly opportune at this time. Both subjects are fresh topics in the world of science.

In Our July Issue

Our Cover

this month depicts a scene from the story entitled, "The Message from Space," by David M. Speaker, in which an inhabitant from one of our satellites, which the author calls Astrax, is seen trying to escape from the conquering intelligences of a neighboring planet.

Cover Illustration by Morey

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VOLUME 5

AMAZING STORIES

THE MAGAZINE OF SCIENTIFICTION

JULY, 1930 No. 4

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Extravagant Fiction Today - - - - - - - - - Cold Fact Tomorrow

Interplanetary Travel

By T. O'Conor Sloane, Ph.D.

IT is not safe at the present day to be incredulous about what mankind is going to do in the near future. Professor Simon Newcomb, who died in the year 1909, and who was one of the leading astronomers of the world, announced his firm belief that flying in a heavier-than-air machine was an impossibility and would never be achieved by man. Professor Langley, another of the world's great scientists, distinguished for his researches on stellar heat, the inventor of the bolometer, made fruitless experiments in flying and suffered much unfavorable comment and ridicule for his efforts. According to some stories, he died largely of a broken heart because he could not achieve success. And now, when a flight is made across the American Continent in a little over half a day, it is amazing to think of what progress was made in the last twenty years.

In early days, the Wright biplane, with its comparatively slow revolving propellers and its clumsy chain drive, was really the prominent flying machine and could go perhaps thirty or forty miles an hour. All the machines of that date were so slow that wind was a hazard, and students of aviation used to employ the early morning hours, about sunrise, for their practice, because that was the calmest period of the day. The crossing of the British Channel by Bleriot in an airplane from France to England was considered one of the great achievements of those early days and was commemorated by a monument showing the place where he landed.

Now aviators are considering the possibility of crossing the channel in a glider with no engine!

It is fair to say that no invention of man has paralleled that of flying in its development in the comparatively short time of twenty years, for the last two decades have given airplanes a range of flight about two hundred times greater than the early attempts, and a rate of speed ten times that of the old Wright machine. A flight with one passenger was something to be talked about in those days. Today, one hundred people are considered a quite possible load for an airplane.

And we have now arrived at a point of scientific development when seemingly wild predictions might be safely indulged in. Professor John Q. Stewart, Associate Professor of Astronomical Physics in Princeton University, before the members of the Brooklyn Institute of Arts and Sciences, declared that it was his belief that in another twenty years airplanes will have attained a speed of 1000 miles per hour. This is only three times the maximum speed of the present, which is ten times the speed of the early practical airplanes. It seems entirely reasonable that a speed of 1000 miles per hour will be attained long before the time limit set by Prof. Stewart.

But our professor goes further. He believes that in the not very distant future—specifically he names the year 2050—sufficient speed will be realized to make possible successful flights to the moon. Other difficulties exist for such trips, of course, but Prof. Stewart, among others, does not think they are insurmountable.

At a height of five or six miles, the strain on an aviator is almost unendurable, as the cold and rarefaction of the air are extremely trying. Artificial heat, of course, could be provided and some provision could probably be made to supply air for breathing. Both of these would be absolutely necessary for interplanetary travel.

The only kind of airship which we know of now that might be used for trips through space is the reaction ship, driven on the principle of the rocket. It is hard to see what other method of propulsion could be used in the vacuum, which would be reached a few miles above the surface of the earth.

And here we find a double factor. The resistance to forward motion in an airplane is due, of course, to the air. The famous Paris gun, which bombarded Paris from a distance of 75 miles, was able to do so largely because it shot its projectiles to a height of 24 miles, where there was a very slight air resistance to oppose the forward motion. This must also apply to interplanetary travel.

Once an interplanetary ship reached a height of twenty-five to thirty miles from the earth, it could cut down its power as far as forward progress is concerned. After a while, gravity too would be diminished to the vanishing point, and a minimum quantity of fuel would be required to keep the ship going. In a region where gravitation would not be felt, on account of the relative distances, as it might be from the moon and the earth, it would seem that once any desired speed was reached, the power could be shut off and the ship could go on almost indefinitely without consuming fuel. We know that there are tremendous energies in the elements. Hydrogen, atomized as in the wonderful activated hydrogen blow-pipe, weight for weight has one hundred times the energy of coal combining with oxygen. Activated lithium, with its three electrons in the atom, represents sixteen times this energy. This makes it possible for us to make the weight of fuel an absolutely minimum consideration if it could be carried out.

On the face of it, the greater part of the journey would be done without the exertion of any great power, and when the zero point of gravitation was passed the speed would be accelerated and reinforced by the pull of the moon or the planet, as the case might be, which the aviators were approaching.

The most obvious difficulty in interplanetary travel seems to be the question of acceleration. Acceleration of high degree might be fatal to passengers exposed to it, and it must be of a high degree for the traversing of limitless space. Even the maneuvers of a war airplane at its normal high speed are extremely trying to the occupants. It is thought, in fact, that in extremely abrupt maneuvers, even death might ensue. Yet a speed of three hundred miles an hour would be deadly slow for cosmic travel.

We hardly need authority for giving so many interplanetary stories. It is interesting to think of how future generations may read them as examples of what simple matters the ancients considered "impossible."

A Visit to Suari

A Martian Comes to Earth

By A. Hyatt Verrill

Author of "The Bridge of Light," "Death From the Skies," etc.

IT is undoubtedly a novel idea—on which this story is based—the separation of the protons and electrons and their transfer through space, to be recombined into their original form; that is, with reservations. The discovery of a means of transportation by means of disintegration would certainly solve a great many problems on interplanetary travel—to say nothing of shorter distance transportation. Mr. Verrill comes forward once more with an unusual treatment of a subject that is familiar to so many of us by this time—even to those who are not yet readers of AMAZING STORIES. *What are the other planets and their inhabitants like? What beings live upon them if they are inhabited? In "A Visit to Suari" our author gives us a touch of sarcasm that is pleasantly reminiscent of Dean Swift.*

Illustrated by BRIGGS

CHAPTER I

Kespi-Nanay Returns

EXCITEMENT, speculation, wonder and interest ran high in Sonko-Huara, for news had been spread that Kespi-Nanay had returned. It was almost as though a person had returned from the dead. In a way, it was more amazing, for persons *had been* known to be resuscitated; moreover, everyone knew that death was merely a state and that the spirit that left one body took possession of another. But Kespi-Nanay had *not* died. He had merely disappeared—vanished completely—three Chukitis (years) before, after declaring that he intended to visit Suari, that great, glowing, mysterious planet that from the very beginning of history had been a source of wonder, of study and of baffling mystery to laymen and scientists alike. It was the nearest planet to Sonko-Huara—near, however, only by comparison—and separated by some forty-odd million Tuppus (miles) of space. Yet through the ages the astronomers of Sonko-Huara had learned much about their great, glowing neighbor, that, like their own planet, raced about the sun and rotated upon its own axis, so that the Sonko-Huaran scientists knew that the seasons, the climate, the alternating days and nights of Suari must be very similar to their own.

Through their telescopes the astronomers of ancient times had studied Suari; they had viewed its surface from pole to pole and completely around its circumference, for unlike Quilla (the moon), that presented only one side to view as far as Suari is concerned, Suari presented every portion of its surface to the eyes of the studious and curious inhabitants of Sonko-Huara. Often, however, strange masses of dense vapor obscured the big planet. Often, for long periods of time, certain portions of Suari were completely blanketed by these impenetrable masses that so puzzled the scientists. Yet always there were certain portions of its surface that were free from the vapor. Innumerable speculations had been raised by this phenomenon, for no such tenuous veil ever hung over and above the surface of Sonko-Huara.

Always the sunshine or the moonlight streamed upon it from a cloudless sky, and often, on moonless nights, for they had their own moons, the glow from Suari illuminated the planet. Through the ages, too, much had been learned of the surface of Suari. Over two-thirds of the planet was covered with water (an amazing discovery for the Sonko-Huarans whose planet was woefully short of water and was, with the exception of polar seas and inland seas, all land). Vast mountain ranges, great canals (crooked and winding in most remarkable manner) had been studied and mapped; immense masses of ice had been seen to cover the polar regions, and the astronomers were both astonished and puzzled to note that the appearance of the land masses changed continually. At times they were white, at others brown, at others green. Gradually they noticed that these alterations followed a regular sequence, that they were repeated at fixed intervals and that they bore a direct rela-

Excitement, speculation, wonder and interest ran high in Sonko-Huara, for news had been spread that Kespi-Nanay had returned.

tionship to the position of the planet in reference to the sun. Suddenly the Sonko-Huaran astronomers had had an inspiration. Their neighboring planet must be inhabited! It must be populated by intelligent beings not unlike themselves! The change in colors must be the result of these beings cultivating the land!

The Sonko-Huaran astronomers, the scientists, even the common people became greatly excited and intensely interested in this theory. What manner of creatures could dwell upon Suari? What unthinkably strange and primitive beings they must be to till the soil and raise crops—industries that had been abandoned, forgotten by the Sonko-Huarans countless ages ago.

Discussions ran high as to what these dwellers on the other planet might be like. Were they formed like the inhabitants of Sonko-Huara? Were they weird, monstrous, fearsome creatures? Or were they totally unlike anything ever known or seen?

Yet years had passed, centuries, as we measure them, had slipped by before the suspicions of the Sonko-Huaran scientists had been confirmed, before instruments has been perfected to such a state that the observers on Sonko-Huara could prove that Suari was inhabited. Gradually the other planet had been brought visually closer. It was an epochal discovery when lights had been detected upon the dark area of Suari, lights

obviously artificial. It had been a still more epochal discovery when an astronomer of Sonko-Huara had seen a city on the other planet. With each new discovery of this sort, each announcement that there was some new and indisputable proof of the existence of sentient, intelligent beings on Suari, efforts to obtain a more intimate knowledge had been redoubled.

Ages before the return of Kespi-Nanay, after his mysterious absence, the surface of Suari had been brought optically within a few thousand miles of Sonko-Huara. It was by this time an established fact that the other planet was thickly populated by some sort of intelligent beings. They had cities, towns, lights. They moved from place to place. They dug canals, they leveled mountains, they transformed the surface of their lands over vast areas. Yet all the constant minute studies devoted to them tended more and more to prove to the inhabitants of Sonko-Huara that their neighbors forty million miles away were immeasurably backward and behindhand, that, assuming them to be in the least similar to the Sonko-Huarans, they were more or less in the same state of civilization as the inhabitants of Sonko-Huara had been in their prehistoric days. Their stupidity, as assumed through reasoning and experiments, was absolutely astounding. Not only was it evident that they still made use of the archaic method of obtaining foods and other necessities by agriculture, but in addition their cities, as far as could be determined, were marvelous examples of the survival of ancient, long-abandoned barbarism.

And despite every effort on the part of the denizens of Sonko-Huara, the unintelligent creatures on Suari failed to respond to the plain and simple signals that had been devised to attract their attentions. The simplest and most readily read messages had been formed on the surface of Sonko-Huara and had been displayed day after day when the two planets were nearest to each other, yet there had been no response, no answering signals. To be sure, the watchers had noticed strange masses and groups of lights, but they were meaningless; they conveyed nothing and it was decided they were merely to illuminate some great gathering of the Suarans.

THEN had come the strange, mysterious but wholly undecipherable sounds that had first been detected and reported by Kespi-Nanay, the greatest of living scientists on Sonko-Huara. That they came from Suari, he was convinced, and despite the scoffs of fellow scientists, he boldly declared his conviction that they were signals of some sort, sent out by the dwellers on Suari. He pointed out that the sounds were articulate, that they were not mechanical and hence must have originated in the throat of some living creature. He also proved that the same sounds were constantly repeated with carefully timed intervals between each series of sounds. But he was derided, ridiculed when he promulgated the theory that beings on Suari—especially such barbarous, primitive, stupid beings as all agreed they must be—could project their voices across millions of miles of space.

Even the Sonko-Huarans could not perform any such feat and—asked one of the news-dispersers—if Kespi-Nanay deemed the sounds to be voices, why, with his superior knowledge, could he not interpret the words? But despite the fact that Kespi's theories and beliefs found few followers, interest, that had flagged for years, was revived, and once more Suari became the center of all interest, all speculations, all studies.

Various wild schemes were suggested for visiting the other planet. Learned scientists spent days and weeks in abstruse calculations to prove that a trip to Suari was not, scientifically speaking, impossible. All the ultra-advanced knowledge of the inventors and scientists was employed in trying to devise some means for making the journey. There were gravitationally impelled machines, machines that were designed to be hurled into space by the rotational movement of the planet, machines of endless types. Yet in every case there was some impediment, some fatal fault that proved conclusively that none would serve.

Despite the logical warnings of the experts, several actually were tried. One machine, impelled by the power of a decomposing atom, left the surface of the planet. It gathered speed so swiftly that it became invisible, but, a few moments later, a terrific explosion in the upper atmosphere told the anxious and hopeful watchers of its fate. Another machine, designed to eliminate gravity as was done in the case of the ordinary machines used for every-day travel, but with devices to enable it to fly off at a tangent by the momentum of the planet's rotation, became incandescent and was transformed to gas by its friction through the upper air. Still another, by far the largest and most carefully planned of all, was impelled and controlled by the recently discovered Ethmic force and succeeded in winning clear of Sonko-Huara's atmospheric envelope. For the first twenty-four hours its progress through space was watched with bated breaths, and it seemed as if at last a successful voyage to Suari was to be accomplished.

But, about the thirtieth hour, it was seen that the machine's course had changed. It was veering away from the orbit of Suari and presently, to the horror of the Sonko-Huarans, it was determined that beyond any possibility of doubt the apparatus had become a satellite of the planet and was doomed forever to move around and around the sphere like an attendant moon.

Then, when everyone had given up all ideas of ever being able to visit the fascinatingly mysterious Suari, Kespi-Nanay had come out with his absolutely astounding statements. Matter, he declared, was all imaginary. It did not actually exist. It was merely a combination or grouping of protons and electrons. This was by no means a new theory. In fact, generations before Kespi had been incubated and brought into existence, other Sonko-Huaran scientists had promulgated exactly the same theory. But nothing had ever come of it, no one had ever been able conclusively to prove it. But Kespi-Nanay claimed he could; he averred he had; and he insisted that his discovery paved the way to visit Suari and to return in safety.

Naturally he once more became the target of derision, ridicule, jokes and incredulity. To do a thing was not enough; the important matter was to convince others. Achievement amounts to nothing unless the public admits the fact of that achievement. Kespi was determined that his astonishing achievement should be admitted.

So he announced that he would give a public demonstration of the truth of his claims. His promise was more than fulfilled. Before a vast gathering—in fact, before all the inhabitants, for by means of the universally employed vision-disseminators or Muri-Willyas, the demonstration was visible everywhere upon the planet—Kespi-Nanay caused a cube of metal, a tablet of Chocli-Hanca or concentrated food, and even a Pilcu bird (the

only wild fowl on Sonko-Huara) to vanish before everyone's eyes. Then, as the people listened most attentively, he stated that he had gone further with his experiments than he had revealed hitherto. Not only, he informed them, was matter merely the result of certain arrangements of protons and electrons, each form of matter so-called being the result of slightly varying combinations, any or all of which might at will be broken up into the independent quanta and so rendered invisible; but, he went on, the same electrons could, by properly devised instruments and treatment, be summoned back into their original places with the protons.

At these words an exclamation of incredulity arose from thousands of lips. It might be possible—in fact, was possible, as they had seen—that matter could be forced to disappear. It was not so very remarkable after all, they decided, for water was matter and yet it could be made to evaporate and vanish. Moruli was matter, yet it could be consumed by flame and made to vanish without leaving a trace of ashes. But that matter, once it had vanished, could be restored to its original state was too incredible.

The next moment they began to have their doubts as to their conviction. Kespi, as if reading their thoughts, was speaking of these very things. Water, he was pointing out, could be recovered—was not this precisely what happened daily? Did the sun not evaporate water, cause it to vanish? Most assuredly. Yet did that water not fall again as rain? And salts, dissolved in water and hence destroyed as matter in their particular forms, could, as all knew, be readily recovered. Why then, he reminded them, was it so incredible to believe that metal, living flesh—any object—could not be reformed by summoning the protons and electrons, of which such matter had been composed, and forcing them to group themselves as in the first place?

Hardly had he spoken when, by seemingly magical means, the cube of metal, the heap of food, the bird were once again before him—conjured from nothingness, from the air.

A deafening roar of approbation and applause greeted his demonstration and drowned his next words. When order and silence had been restored, he made his most astonishing statement of all. Not only could an object be restored, rebuilt from its original protons and electrons, but he informed the amazed people it could be rebuilt in a totally different locality from that in which it had been disintegrated. And to prove this incredible statement, he proceeded to cause the three objects to vanish and to reappear almost instantaneously several hundred feet distant.

The people by this time were beyond expressing their wonder. But still more astonishing things were to be vouchsafed them. "My discovery," observed Kespi, "will be the means of solving that ages-old problem of making a visit to Suari. Because, my friends, whereas matter, as we know it, may not travel through space by any known means—and if it were possible for it to do so ages would be required for it to traverse such a Tuppu as separates us from Suari—the constituent electrons and protons of matter can traverse space unharmed and with such extreme speed that they may be said to travel instantaneously. Hence an object may be reduced to its free quanta or portions here on Sonko-Huara and within an inconceivably short time afterwards they may be reassembled in the original material form on Suari or elsewhere. Distance, space has no effect upon them. Ah, you ask, how do I know this? By reasoning, by logic, by the unalterable laws of the universe," he exclaimed. "I can assure you that I can make this metallic cube vanish, and before you have realized it has gone, it will be in its original form somewhere upon the surface of Suari. But——" with a laugh, "of course it might be beneath the waters of that planet, and equally, of course, you could not see such a small object on distant Suari, and hence I could not prove my claims. But"—his tones were so impressive, so earnest that everyone awaited breathlessly for his next words—"but," he repeated, "so sure am I of my deductions, so convinced that my reasoning is correct, that I plan to test the matter on myself. Tomorrow I shall cause myself to be disintegrated, and—if all goes well—shall cause myself to be reassembled upon Suari. In other words, I shall be transported—not as a body of matter but as countless trillions of electronic and protonic units—through forty million Tuppus of space and will find myself in material form upon that mysterious planet.

"Of course," he smiled, "I run a slight risk. I, like the metallic cube, might be reassembled in the water. I might be reformed in some other equally unpleasant and fatal situation. But that is a chance I must take. The promise of the adventure is worth risks. Personally, however, I do not foresee any such difficulties. My experiments have proved to my own satisfaction that I can cause an object, reduced to its constituent electrons and protons, to form again within a very restricted area, predetermined by myself. I have selected the area on Suari, where, if all goes well, I shall be reformed. It is a spot that is somewhat remote from the strange collections of structures, which we assume to be refuges of the Suarians, and in an area that—not having presented the alternating colors indicating the presence of living beings—is, we assume, uninhabited. I do not"—he smiled—"particularly desire to appear suddenly and as if by some supernatural means in the immediate vicinity of a Suarian or of several Suarians. We may feel fairly certain from our observations and studies that they are a primitive, backward and not over-intelligent lot, and probably therefore as superstitious and as readily startled as were our own ancestors in the remote past when they, too, depended upon the cultivation of the soil for their livelihood. I might be struck down—even devoured by the creatures before I had an opportunity to make my friendly intentions and my physical actuality understood. Moreover, as we have no conception of the physical peculiarities of the inhabitants of Suari, I might, and probably would, appear as a strange, bizarre and monstrous creature to them. Naturally we assume that, as Suari is many times the bulk of Sonko-Huara, its inhabitants will be proportionately gigantic, and hence I would be completely at their mercy.

"But"—with a sigh—"I shall take the risks. My greatest fear is that I may not find it possible to return to Sonko-Huara. Conditions on Suari may preclude the possibility of my reversing the process by which I leave here and reappear on Suari. Naturally I shall take my instruments with me, but atmospheric, electrical, gravitational—a thousand conditions—may interfere with their proper operation on that planet. However, we have no reason to think that such conditions are not very similar to our own. The examinations and tests we have been able to make convince us of that. So, my friends and fellow Sonko-Huarans, tomorrow at the time of Kora-Ma, when Suari is nearest to us in its orbit, I shall

cause myself to vanish. I may never return or again I may reappear among you at any time. But if I do not, my loss will amount to little, whereas if I do, I shall have learned the truth of our neighboring planet."

KESPI had kept his word. In sight of all, at the hour of Kora-Ma, he had bade the public farewell and, an instant later, he and his compact instruments had vanished before their eyes.

And now, three Chukitis after that dramatic disappearance, Kespi-Nanay had returned! Micchu-Tay had been the first to see him. The old fellow had been inspecting the local vitamin plant near Ir-Chu when a slight sound had attracted him, and wheeling about, he saw Kespi-Nanay standing almost by his side. But as fear, fright, superstition and the sensation of being startled had, ages before, been lost to the Sonko-Huarans, Micchu-Tay had merely expressed mild astonishment, and instantly had sent the news flying throughout the planet by means of the thought disseminator, which he, like everyone else, carried always with him.

Yes, Kespi-Nanay had unquestionably returned. He had altered in no way, and he declared that he had been on Suari for three Chukitis; moreover he would publicly relate all his experiences in the Muru-Ti, so that all the inhabitants of the planet might, if they so desired, both see and hear him, for the Muru-Ti or public auditorium was equipped with the vision-disseminators as well as the audio-extensors that rendered him both visible and audible to all on the planet, who cared to adjust their instruments for the purpose.

CHAPTER II

First Impressions

NEVER in the historic eras of Sonko-Huara had there been greater, more wide-spread interest and expectation than were caused by Kespi-Nanay's announcement. At last, after ages of surmises, of studies, of deductions, none of which had answered the puzzle, the truth of Suari and its denizens would be learned. No one doubted for a moment that Kespi had actually visited the other planet. His demonstrations, three years earlier, had removed all doubts as to his claim, and while everyone had long since come to the conclusion that he had either failed to materialize on Suari or, having materialized thereon, had been destroyed or had been unable to return, the fact that he *had* returned convinced them that his amazing undertaking had been a complete success.

A universal holiday had been announced, to continue until Kespi had completed his narrative. But this was really superfluous, for no one would have attended to his or her duties anyway and, moreover, the Apus and Amautus, even the Tarancas, could be counted on to be present to hear and see the returned interplanetary wanderer, and without them the public would have been as helpless and as futile in accomplishment as an ant without its antennae.

Hence practically every being on Sonko-Huara gave undivided attention to Kespi-Nanay when he entered the great auditorium of Muru-Ti and, seating himself between the Amautu-Ka and the Apu-Inki, proceeded to tell his fellow Sonko-Huarans of his amazing and almost incredible discoveries and experiences on Suari. And often, as he spoke, his listeners unconsciously and involuntarily glanced, half-fearfully, at the great golden hemisphere of Suari in the sky, as if actually expecting to see some of the strange beings or marvelous sights that Kespi-Nanay was describing. "As you all know," he began, "I caused my material body, together with my instruments, to be disintegrated here three Chukitis ago. Of that disruption of my protonic and electronic component parts, or of my instantaneous flight through space I have no recollections. I have a dim memory, like that of an evasive dream, of strange sensations, of whirling madly like a bit of dust. But my next actual concrete sensation, after I turned on my disintegrating and projecting device, was one of standing in a strange place. I felt so natural, so precisely as if nothing had happened that, for a fleeting moment, I feared nothing *had* happened, that my experiment had failed. But a glance at my surroundings reassured me. Nothing was familiar. Never had I imagined such a spot. I was standing on a far-reaching area of rocky sand. Above me was the blue sky, and across it stretched masses of the same white vapor we have seen so often about Suari. Also, there in the sky, was Quilla, but appearing very small and far away.

"On one side rose high, bare mountains, on the other the plain stretched to the horizon, and within a short distance of where I stood I saw an amazing sight. There, staring at me, curiously but apparently unafraid, and not even surprised, were a number of the inhabitants of the land. Never had I seen such impossible creatures. No Sonko-Huaran imagination could have conceived of such beings, and even if I describe them to you, my friends, you cannot picture them to yourselves. They were brown or black, shaggy-skinned and stood on four legs. Their necks were long, thin and bore elongated heads with immense ears and large dark eyes. They appeared intelligent, and judging that they must be more intelligent than we of Sonko-Huara had thought, I addressed them. They evidently heard my words, for they moved their ears, but they made no reply. Of course I was not surprised. I had hardly expected that the Suarians would understand our language. So I made signals, but the Suarians showed no signs of understanding.

"They appeared peaceful and quite harmless, so cautiously I approached them. I was quite close to them when they turned abruptly and moved off. Evidently they were suspicious of me, and desiring to let them know I intended no harm, I spoke again. This time they turned about and took a few steps in my direction. I was delighted. I felt that they must understand my tones, even if not the meaning of my words.

"Then a most amazing thing happened. Another creature appeared from behind a rock. He was much smaller than the first inhabitants and he stood upon two legs! Ah, I know you will find it hard to credit that statement, but it is the truth. And you can find it no more difficult to believe, as I tell it, than I found it, as I saw it. A living intelligent being on two feet like a bird, and other living intelligent beings on four feet! Obviously we had never guessed the truth, Suari was inhabited by two forms of beings, and I wondered if it could be possible both were the same species—if one were male, the other female or if one was the young of the other. But the two-legged creature differed in every respect from those of four legs. He, too, I noticed, possessed four limbs but he stood on but two and used the other two for grasping objects, as we use our members, whereas the creatures on four legs possessed no limbs for grasping.

Moreover, the two-legged being was red in color, his skin appeared to hang in loose folds from his neck, and yet his limbs were of a different brown color and of a distinct texture. Neither was his neck long nor his head elongated. On the contrary, he had scarcely any neck. His head was round but rose to a point at the top; his ears were deformed until they were scarcely more than orifices; he had no horns; his eyes were but two in number, and in the front of his head; the rear portion being covered with a rough wool or fur; and his mouth showed no tusks.

"He stared at me for a space and then spoke, and to my astonishment I found I could comprehend his words, even though they were different from our own. I gathered that he asked who I was and whence I came. So I replied that my name was Kespi-Nanay and that I came from Sonko-Huara. His mouth widened in a most remarkable manner; he appeared to understand. But all this time I was filled with astonishment. He did not appear to be terrified or even amazed at my appearance, as I had expected he would be at seeing for the first time a visitor from another sphere. Surely, I thought, my form—I glanced down at myself and gasped in utter amazement. I was *not* myself. I had but two legs, two arms! Half-fearfully I raised my hand to my head. My horns had vanished, my soft pendant ears had disappeared, my magnificent tusks no longer protruded from my lips, my tentacular antennae were missing! Fur, not scales, covered my head, my ears were mere holes; in short I was the exact counterpart of the two-legged creature before me. I was dumbfounded. I felt as if in a dream. Then suddenly, I understood. The constituent electrons of my being, when reassembled with my protons upon Suari, had produced my material body in the form of a Suarian.

"It was a contingency I had not foreseen; yet, now I considered it, it seemed perfectly natural. The conditions of Suari that had resulted in the molding of such puny, underdeveloped, physically imperfect beings as the creature before me (and myself) controlled the combining of the electrons and forced them to produce Suarian forms. No doubt, I decided, were a Suarian to be transported to Sonko-Huara by the methods I had used, he would be materialized in the form of a Sonko-Huaran. But I was thankful that I had assumed the form of the two-legged inhabitant rather than that of the beings with four legs, who—though they appeared far more intelligent—seemed dumb, for as yet they had uttered no sound. I was astonished also that I could converse with the strange creature of the two legs. For a space I thought that possibly the same laws and conditions that had so altered my body to a Suarian form had affected my mind and my speech to a similar extent. But no, the words the other being used were so familiar, so nearly identical with those of my own tongue, I cast aside that theory. By some amazing coincidence, or for some unknown reason which I might yet discover, there was a very close relationship between the two languages.

"BUT my speculations on such matters were interrupted by the appearance of two more beings. One was precisely like the first two-legged being, the other was quite different. The head was similar, but the colors of the strangely loose skin were brilliant and the creature appeared to have no legs, the body extending in a solid mass to within a short distance of the ground. This was the more remarkable as the being possessed feet that appeared to move back and forth under the solid body in a most amazing manner. It was not until much later that I learned that this being was the female of the others and that it actually possessed legs, which were concealed by artificial layers of skin that the Suarians call 'clothes.' In fact, I found to my astonishment that all the loose, bright-colored coverings I had seen were artificial and that the true skin fitted the body closely and was very smooth, soft and pleasing in shade, although, as I shall explain, the tint ranged from a very dark, blackish-brown to almost pure white, a truly remarkable condition. It was also, I learned, considered very wrong and a proof of barbarism to appear without the artificial skin over one's body, and the beings I first met, stared at me and uttered strange sounds with their mouths widely open, because I was not provided with such coverings. Presently, however, the creature, who, I found later was the female spoke to one of the others who pulled a portion of the coverings from his own person and placed it over me. The others added more pieces until I was covered similarly to themselves. To me these things were most uncomfortable, feeling very rough and irritating to my body, and I would have liked to have cast them off. But I wished to remain on friendly terms with the strange beings and (at the time) thinking it was perhaps a rite or ceremony indicative of friendship, I bore the discomfort. Why these beings of Suari should have developed such habits is beyond me. Their bodies, ugly and deformed as they were, were far more symmetrical and admirable without the artificial coverings, but I was not so much surprised when, later, I found that some such protection was required for the creatures' bodies, their skins being most tender and easily injured, not being guarded like our own by strong scales that are replaced by new growths when injured. In fact, injuries which we would consider slight often caused the total disability or death of these Suarians, for they are so low in the scale of nature and so primitive in their development, that they cannot replace even a lost appendage or limb with new growths like ourselves. Moreover, although the variations in their climate are not as great as on Sonko-Huara, yet as these miserable beings do not alter their natural bodies to suit conditions, but remain always the same, they are, perforce, compelled to adapt themselves to the weather by varying the artificial skins or 'clothing'.

"But to return to the strange beings I first met. Having been covered with the objects, as I have stated, and thus made to appear even more like the three creatures, they seemed to be more friendly, and one of them did a most astounding thing. He produced a peculiar object which he inserted in his mouth. Then, to my unbounded astonishment, he magically caused fire to spring into being in his hand, and placing the flame against the object in his mouth, he breathed in the fire and emitted smoke from his nostrils. Never would I have believed such a feat possible had I not witnessed it with my own eyes, yet the others appeared not to be surprised. In fact they also produced their own fire-machines and soon all three were breathing fire. I noticed, however, that the four-legged beings did not do so, which convinced me that they were the superior beings and that the others were probably servants or inferiors. Yet this thought troubled me, for in that case I had been reformed on Suari not as the superior but as the inferior type, which would indicate that the Sonko-Huarans were inferior to the Suarians. But I had little time to dwell on this, for

one of the two-legged creatures was offering me a fire-machine. I drew back in horror at the thought of breathing flame, but the being appeared so perturbed by my act that, feeling I must use every care to retain their friendship if I were to learn all I desired of their ways, I summoned all my courage and placed the machine in my lips. To my surprise there was no fire nor heat, and though I carefully breathed in smoke, the sensation was not unpleasant, although it caused me to cough and choke somewhat. Obviously, I concluded, this breathing of smoke was a ceremony, perhaps indicative of friendship, for presently the three laid aside their machines, as I did mine, without as far as I could determine having accomplished anything. But, I thought, if this strange custom is universal among the Suarians (as I found later it was) and if the planet was thickly inhabited, it explained the masses of vapor that hung above Suari's surface and had so greatly puzzled us of Sonko-Huara.

"Having ended the smoke ceremony, the three rose from where they had been seated, and inviting me to accompany them, they moved forward. To my amazement, the four-legged beasts moved with them. In fact, the two-legged creatures appeared to command the obedience of the superior four-legged creatures, and though the latter were far larger and stronger than those with two legs, they made no resistance, even when the others struck them with rods to urge them onwards. And now my mind was quite upset, for here was proof that those I had mistaken for inferior beings were the superior inhabitants of Suari. However, it made me feel a bit easier, for it proved that the form I had assumed *was* that of the superior beings.

"Presently we approached some great masses of stone that were in ruins, but which it was evident had been erected by living beings, and I stopped and stared with incredulous eyes, for upon one of the stones was carved the figure of a Sonko-Huaran! It was quite unmistakable. The numerous appendages and tentacles, the horns, tusks, lobe-like ears, even the scales and other details were distinct. What did it mean? Were there beings like ourselves upon Suari—perhaps the rulers of the planet!

"I turned to one of the two-legged creatures and asked him. For a moment he seemed puzzled. Then he replied that the figure on the stone had been there always, that in past ages it had been adored by his ancestors and regarded as a god. I asked him if similar beings lived near and at that he and his companions made strange bellowing sounds and their mouths opened until their short useless teeth were exposed, and they said there were no such creatures in existence, even if there ever had been in the past. I told them they were quite wrong; that upon my planet all beings were of that sort and that I myself was the same when on Sonko-Huara. They regarded me with most peculiar expressions, obviously with unbelief, and presently again gave way to their strange sounds, which I may as well explain were their indications of derision and hilarity. Evidently they thought my words were a great joke.

"AS we continued on our way, my mind was busy wondering: if there were no Sonko-Huarans on Suari, how could the inhabitants ages before have been familiar with the appearance of our race? Then I recalled the ancient legend of our people, wherein it is told a great Apu named Pakak produced magic, and to escape his enemies, flew with his followers from Sonko-Huara and vanished forever. Was it not possible that there was truth in the tale and that Pakak and his fellows might have reached Suari? I do not know, but throughout the portion of Suari where first I arrived I found many images and statues of the Sonko-Huaran forms, and in the traditions of the people, there was a being they called Pachak. But I had so many other strange and astonishing things to interest me that I gave little thought to such speculations. We soon came to a deep valley and there the brown earth was hidden under rich green, and water flowed in canals as it does on Sonko-Huara. But the canals were tiny affairs and the green was, as we have long ago surmised, the color of the vegetation of Suari. In the valley also, was the collection of structures wherein the Suarians dwelt, for incredible as it may seem, these beings dwell in cubicles closely placed in groups and herd together like swarms of insects. Their strange reasons for so doing I learned later and I will leave the explanation until I speak of the larger groups of structures that I visited subsequently.

"In this first group were hordes of the two-legged creatures, males, females and young, but no two exactly alike, for not only do the Suarians vary individually, but, as I found later, there are many races of them, varying in color, in size and in every respect, even as to intelligence and culture—all working at cross-purposes and even fighting with one another. But in this first place I visited all were of one color or nearly so and of one race, although their artificial skins varied in color and form.

"Also, to my amazement, I discovered that the four-legged beasts were *not* artificially covered, but that the shaggy coverings actually grew upon them, yet they were inferior creatures and mere slaves of the two-legged beings. More surprising still, I found that these were not the only slaves. There were giant creatures with horns upon their heads; there were smaller beings with immensely large ears and big heads that served the two-legged creatures as beasts of burden; there were still smaller four-legged Suarians that possessed sharp teeth and that appeared savage and uttered sharp barking sounds when strangers approached, but were docile with those they knew; and there were many other four-legged things as well as hosts of birds larger than the Pilcus. All of these I learned were kept in captivity by the two-legged beings and were forced to labor for them, which was most strange, for many were superior in intelligence and in senses to their stupid and backward masters. Although you may not believe it, yet it is a fact that the two-legged inhabitants of Suari—men and women as they are called—are so deficient in sense development that they cannot see scent nor sound; they cannot hear light nor scent, and they cannot smell sound nor light. Their eyes, of which they have but two, are used only for seeing that which is the result of light waves. Their ears, which are mere holes in their heads, are useful only in detecting sound vibrations, and their noses which also are holes in their heads, can only detect odors. Moreover, being thus deficient and unable to use their three sense organs in unison or to substantiate one another, the Suarians are lamentably deficient in sight, hearing and scent. Many of their captive creatures are far superior to them in these respects, and it is a most amazing fact that the so-called superior beings actually keep the so-called inferior creatures (especially those with the sharp teeth and barking sounds) because the latter possess keener sight, hearing and scent than their masters and hence serve as additional ears, noses and eyes and warn their masters

of many events and perils of which otherwise they would be ignorant.

"Of course, being materialized in the form of a Suarian, I was to a great extent like them, but in my mind and my senses I had not changed, and though the alteration in the structure of my eyes, ears and nose rendered me less sensitive than normally and though lacking my horns I could not receive thought messages—still I could detect many things that the Suarians could not. For example, I was aware that the various four-legged creatures were conversing among themselves, and while I could not understand their languages, it proved how degenerate and undeveloped were the two-legged people, for in all my travels I found none who could hear the voices of the four-legged creatures when they conversed in normal tones.

"When I first reached the abiding place of the three beings I had met on the plain, I found many of the females performing mysterious rites over fires. At first I thought that sacrifices were being offered, so you may judge of my astonishment when I discovered that they actually were preparing food! To these benighted backward and stupid beings sustenance is the main object in their life. All their efforts are bent towards providing food. They labor and strive and live with the one end of keeping life in their bodies by means of food. And imagine, if you can, what their food is! We have long ago decided that the Suarians must still adhere to the prehistoric, archaic method of cultivating the soil and raising crops for sustenance. This I found was the case, but they go even farther back. They actually kill their captive beasts and birds and devour them! And the poor, deluded, ignorant creatures have never learned that all they obtain in the way of food by such roundabout means may be secured with little effort and no waste from the air, water and earth direct.

"IMAGINE, laboring to prepare the soil, sowing seeds, raising vegetation and devouring the resulting plants in order to supply their bodies with the elements that are derived from the air, earth and water by the plants! And imagine, if you can, the still more roundabout, clumsy and wasteful method of rearing such plants, feeding them to beasts and then killing the beasts in order to extract the few atoms of sustenance needed, and which have been gathered by means of the plants and transferred to the flesh of the beasts! And the beasts' carcasses, the waste material of the crops, are used to supply the elements for more plants and more beasts to provide more sustenance for these Suarians in a vicious, never-ending circle. You would be absolutely astounded were I to describe what and how these beings eat. So great is the waste material in all they call food that one family is forced to devour daily material whose bulk would equal the amount of concentrated foods required to feed our entire population! Though they boastfully declare themselves intelligent, highly civilized beings, even scientists, yet never have they learned that all elements of life, force, energy are distributed about them and may be extracted directly and with little effort from their surroundings, without being put through the clumsy extraction process of plants, flesh and fowl. Though their more learned members realize that all energy and power is derived from the sun, yet never have they learned how to employ the energy and power of the sun directly. Instead, they follow the same roundabout methods as in producing food products.

They burn materials, release the stored energy, waste the greater part of it by the employment of crude mechanisms, capture and control a small percentage of the energy they have released, and by a complicated, involved method make use of this small remaining portion of the energy for their purposes.

"I was simply appalled at the terrific, criminal waste everywhere. Fortunate indeed are the Suarians in possessing a large planet still young and rich in its natural resources and elements. Yet even so the waste is so stupendous that, within a short time, the Suarians will have exhausted the life essentials of their planet and will perish miserably from their own lack of foresight, if they do not advance and improve intellectually to the point reached by our forefathers countless ages ago. But all these things I learned little by little as I moved about, for in that first nest of the beings I learned very little. In fact I soon discovered that the beings I had by chance first encountered were a very inferior and backward lot, for unlike ourselves, all of whom are given the same intelligence, the same senses, the identical bodily powers, the denizens of Suari are of innumerable grades of intelligence, of bodily development and of sense acuteness. Partially these variations are due to race, partly they are due to climate, partly to surroundings, but very largely to the fact that the Suarians, no matter of what race, learn only by example, by being taught by others. They have no instinctive knowledge and the offspring of the most intelligent and advanced, if reared apart or amid the inferior members of the population, reach maturity as stupid and backward as the offspring of those about them. On the other hand, the young of inferior and unintelligent beings, if reared and taught by those of the superior classes, may and often do, excel their mentors in attainments.

There has been some effort made to bring about a general and universal improvement of the population by a system of education, but it has amounted to very little as far as I could judge by even careful study and observation.

"Mingled with the other strange and paradoxical features of these beings is a curious feeling of independence, a desire for personal liberty that, considering the conditions that exist, is most amusing. Though robbed completely of all real freedom, completely subservient to rulers, leaders, law makers and countless cunning members of their race; content to be ordered about, to be forced to sacrifice their lives and to destroy others at the demands of those they have never seen and do not know and with whose quarrels they have no concern, yet they rise and refuse to listen to any innovation that is for the good of their race, such as the regulation and rearing of their progeny by duly appointed authorities, the regulation of their food in quality and quantity, the destruction of the unfit—the imbeciles and cripples—and the thousand and one ideas that we of Sonko-Huara have long ago adopted and which, as proved by experience, appear to be the most admirable and beneficial rulings for the community as a whole.

"But I am getting too far ahead of my experiences. All these matters I learned long after I left the beings I first met and after I had found and mingled with the white Suarians who claim—and perhaps rightfully—to be the most intelligent and progressive of the inhabitants of the planet which they call the 'earth' or the 'world' and who call Sonko-Huara by the name of 'Mars'.

CHAPTER III

The Monsters of Suari

"ONE of the earliest discoveries I made was that all Suarians—or as they call themselves, 'human beings' were not of the same race and that no language was universal to all. This came about through the arrival of a remarkable being in the community where I had first arrived. He came across the plain, a gigantic, four-legged creature with two bodies and heads, the most terrifying monster it is possible to imagine. One body was rough, hairy, immense, with a heavy neck fringed with long hair, and bearing a great bony head with pointed ears, staring eyes, snorting nostrils and great yellow teeth. The other body resembled that of the two-legged beings but sprouted from the larger body's back. It bore two arms and a small round head with features somewhat like those of the men I had seen, but covered with dark fur, and with the skin, where it showed, a peculiar pink. The monster came rushing onwards and to my amazement the beings of the place showed no fear nor did they endeavor to flee from the fury and destruction of the oncoming creature.

"Had I not been of Sonko-Huara I should have sought safety in flight, though so swift was the pace of the thing that it would have been hopeless. Even as it was I felt dread, yet I stood my ground, and was still more amazed to observe that the four-legged things, even those smaller ones with the sharp teeth and yelping voices, did not dash away in terror. On the contrary they ran snapping at the monster who made no attempt to destroy them. The next moment it was close at hand. It came to a halt and I stared, unable to credit my senses, for before my wondering eyes the monster separated into two portions. The smaller body with its head broke away from the other! It sprang to the ground, and to my utter amazement I discovered that it was a separate being, a creature with two legs, in form precisely like myself and the others, while the other portion was a distinct creature, a four-legged being unlike anything I had seen. The two-legged being spoke in an unknown tongue and at his bidding the beings about fled to obey him. They seized his four-legged companion, who seemed strangely docile for such a monster, and took him off; they led the two-legged being to a cubicle, and they hurried to bring him food and drink. Here indeed, was a strange happening. He seemed scarcely different from the others, he wore similar coverings upon his head and body and feet, and he appeared no more intelligent than those who treated him like a superior being.

"Why, I wondered, was he so regarded? I questioned one of the beings, who by now had come to regard me as one of themselves, and he looked at me with amazement. The being who had arrived upon the monster *was* a superior being, I was told, for he was white. Anxious to learn more of such a strange creature, I endeavored to converse with the 'white,' but to my surprise he made no reply and seemed not to understand my words. I felt I had been deceived, for he appeared most unintelligent and made loud coarse sounds through the fur over his mouth. But the others told me that the whites spoke another language, that, in order to converse with them, it was necessary to acquire that language. How strange, how different from Sonko-Huara where all speak the same tongue, where those attuned may converse by wordless thoughts!

"That was my first meeting with a white Suarian. Learning there were many of the race not far distant, that they were even more numerous than those beings of brown skin, and being told they were superior and ruled the whole of Suari, I devoted myself to acquiring a knowledge of their tongue from one of my friends. With my senses and mind so far above those of the Suarians, I found this an easy task and very soon knew all the being could teach me. By this time, however, the first white Suarian had departed, having again joined himself with his four-legged creature. I learned in which direction I must travel to reach the spot where the whites dwelt and I set forth.

"In my Sonko-Huaran form, with my many legs and limbs and my powerful body I would have found the journey trifling, but I possessed the puny form of the Suarians and the two feet, all that belonged to it, soon grew weary. To rest them I seated myself, and presently, in the distance, I beheld a cloud of dust. It approached nearer and I saw it was caused by a terrible, frightful, gigantic monster, beside which the creature of the white Suarian was nothing. It emitted terrifying roars and growls, it possessed immense, glaring, fiery eyes, and it breathed fire and smoke.

"It approached with amazing speed, and hopelessly I gazed about seeking some escape from its wrath. But I was too weary to run and the horrible, screaming thing was almost upon me. How can I describe the thoughts that flashed through my brain? How little had I dreamed that there would be so many forms, such terrifying creatures upon Suari! No wonder the beings I had met had remained primitive, archaic, had not developed any intelligence, when such monsters as that rushing on me were about!

"Had I had time I would have adjusted my instruments, would have caused my body to disintegrate and appear elsewhere. But I had no time. And yet, so swift are thoughts, that I found myself marveling that I had not thought to make use of my device in order to reach the place of the white Suarians, instead of wearily walking there. But it was too late, the devastating monster was upon me. I shook with terror, I, a Sonko-Huaran, but you must recall that I was, bodily, a Suarian. I felt my end had come, as with a screech and a roar the giant beast came to a halt close to where I stood. Even at a standstill it was terrifying. Yet I scarcely glanced at it, for my eyes were fixed upon something else I had not before seen. Upon the monster's back was one of the white Suarians!

"Evidently he was the monster's master. He held it under his control, just as the other white had controlled *his* monster. I breathed more freely, remembering the other. If the white being were friendly, he would not allow his ravenous creature to destroy me and all might be well. And I noticed now that the monster itself appeared quite docile, quite peaceful, staring fixedly ahead with its four round eyes, breathing heavily but remaining motionless. No wonder, I thought, the brown beings regard these whites as superior, if they can thus master such horrifying monsters. And as the white appeared friendly I gathered courage. Presently he spoke, using the tongue I had learned, and asking me whither I was going and if I was not weary. I replied that I was going to where I might find the whites and that my feet were weary; also that I had been terrified at his monster.

"For a moment he appeared puzzled, as if not understanding my newly acquired words. Then he gave vent

to those loud bellowing noises, the Suarians employ to denote mirth. At last he ceased. He made some remark of which I knew not the import, something about a 'queer fish.' Then he asked whence I came, and when I told him Sonko-Huara, he declared he had never heard of the place. Then he startled and amazed me by asking if I would care to 'hop-in,' meaning, I found, would I care to mount the monster, I drew back, asking if the creature might not resent my presence, at which he made more bellowing sounds and his skin turned curiously red.

"He assured me, however, that the monster was harmless and 'tame,' and with misgivings, but desiring to prove a Sonko-Huaran knows no fear, I mounted the creature's back. Judge of my utter bewilderment when, as I did so, I discovered that the thing was no living creature but a machine!

"The next instant it was in motion; we were rushing across the plain and though the motion was rough and unpleasant compared to that of our projectors, yet I enjoyed its novelty. Undoubtedly, I was convinced, the whites *were* far superior to the browns, and I wondered if the monstrous creature on which the first white had appeared had also been a machine. But I learned it was not, when, in our mad rush, I saw others of the same sort with whites upon them. But also I saw others upon which were browns, and once we met a machine like that in which we were and in which, to my astonishment, was a brown-skinned being. I was hopelessly confused. As far as I could see the whites and browns seemed equal in intelligence.

"SOON we reached the place of the whites. Here were many of the cubicles, such as I had seen and in which lived browns. Between these we rushed on and presently came to more numerous and larger cubicles, some of immense size, and with whites everywhere. The machine stopped and I descended to the ground, as did the white being. I thanked him fittingly, and left him, but soon I regretted I had done so, for I found myself at a total loss as to how to proceed. Everything seemed confusion. Everyone was rushing about, everywhere were the great machines, such as the one in which I had come. Also I felt the need of nourishment, but I knew not where to seek sustenance. During my life with the browns I had learned to eat as they did, and presently, seeing a brown female seated beside such food, I drew near and asked for sustenance. She demanded that I should pay for it. At the time I knew not her meaning and was about to move on, when I noticed a brown being stop beside the female and give into her hand some pieces of bright metal, whereupon she gave him food.

"It was a strange and interesting transaction. What could she want with the metal? Was it possible that she could transform it into more food, or was she of some strange race that ate metal? I forgot my hunger in my interest and speculations. Another and another being stopped, handed her metal, secured food and moved on. Yet the female appeared not to desire the metal but dropped it into a receptacle of artificial skin. It was most fascinating, and at last, as she appeared to be friendly, I drew near, and using the tongue of the browns, I asked her what use she made of the metal.

"She gazed at me in astonishment and then replied that she purchased food with it. But she had food, I reminded her. Yet did she insist that the metal was used to secure food, which she gave in exchange for more metal, which she gave in return for more food. It was incomprehensible to me, yet I found that in this marvelous and preposterous manner do all the Suarians live and that their whole lives are made up of thus acquiring bits of metal which they give unto others in exchange for food and other things, which in turn are given to others for more metal.

"Those who have nothing to give, give their labor for the same bits of metal, yet the metal is of no use to them. It can be neither eaten nor drunk nor even transformed into the coverings for their skins. Yet ever, especially among the whites, are all ceaselessly, throughout their lives striving, toiling, even fighting and killing one another, to acquire the bits of metal, and even bits of paper, which pass ceaselessly from hand to hand. And yet I could not find that in the end there was any reason for it. Those who had acquired vast amounts of the metal and paper were no stronger, no healthier, no superior to those who had little. To be sure, they dwelt in larger cubicles, they moved about in the machines I have described, and in machines of other sorts; they covered themselves with more colorful and voluminous artificial skins, but they devoured the same food—the flesh of murdered, four-footed beings, the embryos of birds and the plant growths—that were devoured by those who had the least of the metal. And strangely enough, those who secured the most of the coveted stuff were not by any means the most advanced or intelligent. Often were they the lowest, most backward and most stupid of all the Suarians. While others who were intelligent, who were advanced, who were in fact scientists and should have been honored and followed, had little or none of the metal and paper.

"Of course I did not learn all this while watching the brown female with the food. Rather, my hunger again claiming my attention, I asked her how it was possible to secure the metal with which to obtain the food I craved, and she informed me I must exchange something I possessed for metal or must labor for it. As I stood there wondering what I might do to obtain food, the white being of the machine appeared, and seeing me standing before the female, and perhaps realizing my plight, he came forward and handed me a piece of metal. Thanking him, I gave it to the female who gasped, told me to eat my fill of her food and then returned to me more pieces of metal—together with some of paper—than I had given her. This was the most astonishing thing of all; that she should refuse me food until I gave her the metal and then, when I had done so and had taken the food, she should give back more metal than I had given her!

"But such I found was the custom of these strange denizens of Suari. To them certain pieces of metal and certain bits of paper have greater value than others and all things that are given for the metal or, as they call it, 'money' also have their values. For some much money is given, for others little. Even a being's labor has its value and varies with different beings. And if the 'money' of great value is given for something of little value, then is money of little value given with the thing so that all may be equal. For a long time I could see no object gained and no manner of purpose in all this, but in time I learned that each time the thing for which money was paid passed from one being to another, a greater value was placed upon it, so that each time the being who received the money gained somewhat over what money he had given for it. Yet always in the end whatsoever had been thus gained was again given out

for some other object. Yet so strongly fixed was this strange custom, especially with the whites, that none may live unless they follow it, and I myself was soon obliged to do the same. I had naught to give for money and I knew nothing of Suarian labor.

"For a time I was at a loss, until by chance one day I saw a being in an open space, with many beings of all colors about him. He was causing objects to disappear and to reappear at his command and for so doing was being given the money. So, standing near and adjusting my instrument, I so arranged it as to cause both the objects and the money before him to vanish and to be again materialized beside myself. So that I had no lack of money henceforth, nor of food, for with ease I could secure both by means of my device, which being beneath my coverings, attracted no notice, although great wonder was caused by the manner in which stores of food and of money would vanish from sight. Yet I could not see that anyone was harmed by my so doing, for the money that became mine would have been used but to be given for the food and the food would have been given for the money, and by removing both, nothing was lost. Also the money was of need given forth for other things, such as for a cubicle in which to dwell, for by observation and by questions I learned that it was a law of the whites that no being could sleep except in one of the structures. That was a most strange thing; also quite past understanding. I, or any being, might walk about in the open air throughout the night. I might seat myself and remain as long as I saw fit, but I could not repose and sleep within the confines of the nest of structures save within one of them.

"THERE were many other laws and rules and customs equally strange. Though these beings bathed—there being an abundance of water in Suari—yet save in the privacy of a tiny cubicle they could not remove the artificial skins they called clothes in order to bathe. Yet neither could they bathe in the open air while thus covered. The clothes must be removed and others placed over their skins before entering the water. And while there were large pools of water convenient to hand within the nests of buildings wherein the beings dwelt, yet in these they could not bathe, but must go for a distance to certain waters allotted for the purpose. And though the coverings that they donned for the purpose of bathing were often beautiful, and revealed the most admirable portions of the bodies, especially of the females, yet there were laws saying that these coverings could not serve elsewhere, but must be discarded for others.

"Also, it was held barbaric and even punishable, for a male to appear not wholly covered with the artificial skins they called clothing; the females, however, appeared to have a great deal more freedom in that regard. There were many other rules as foolish as it seemed, yet never did I find a being of intelligence who could explain the reason for such things, for all of the beings of Suari are accustomed to yielding in all ways to strange manners and conventions promulgated by others. Thus, while all are much the same in form, they do ever strive to devise such coverings that one should differ from another; yet by the decree of some one, they must be all much the same. Also it was decreed that whereas the females might wear coverings of the most brilliant and beautiful hues, the males must wear clothes of dull and sombre shades.

"In their cubicles, or as they call them 'houses,' they do the same. Each being will strive to make his home distinct from all others, yet in a way must all be alike. And with all their boasted intelligence and culture—which is that of our ancestors of the times before our history began—they persist in being uncomfortable and unhealthy by nesting together by thousands in these crowds of cubicles of every size. Often one will be erected upon another. Often they will be so small there is barely space to move about. Often they are as dark and dismal as burrows in the earth, yet within them the beings live and go to vast trouble and labor and give great sums in their money to be permitted to exist in such holes. Though there is no limit to the open air and sunshine, yet do they hide themselves away in these vaults and use tiny artificial suns of no value with which to have light. And by some strange twist of their minds they will, at great trouble and labor and expense, bring bits of earth and plants and vegetation within their clusters of houses, although on every side the land may be filled with countless things far more beautiful. Even wild birds that abound in the open air are held prisoners within these dwelling-places, and yet, at every occasion, the beings rush forth, and afoot or in their machines; leave the groups of buildings they call 'cities' and in great throngs fare into the outlying country for a day or a week or more and cry aloud and shout how wonderful it is, and yet hurry back once more to their dens, whereas all might dwell happily and free and much easier and better in separate nests amid the verdure and sunshine, which we of Sonko-Huara would give so much to have in such quantities as they exist on Suari.

"Why these beings should thus suffer I could never learn fully, but in a way it is due to fear, for fear is ever clutching at the hearts and minds of the Suarians. In the past, enemies were feared, and for protection the beings herded together and built stout walls and dwellings easy to protect. But now, though at times there are quarrels and even wars among the beings of Suari, the clusters of buildings are not needed, and in case of war would be of no avail. Yet the fear of being alone still abides in these beings, and fear of one kind or of another dogs them always. He who has little, fears he may never have more. He who has much, fears he may lose what he has. He who is in good health fears illness, and he who is ill fears he may never be in good health. No one is content; no one is satisfied and nearly all fear death. Yet do they tempt death scores of times each day. They glory in taking risks of health, of loss of life, of everything.

"Why they should fear death is still a mystery to me. They profess to believe as do we of Sonko-Huara that the spirit never dies but merely departs from the body to another state. Some believe as do we that it finds a place in another body; others believe that it goes to another planet; and some believe that it goes to some special spot where spirits rule, for in Suari there are endless beliefs, faiths and religions instead of one universal religion as with us. Yet despite this belief that death brings to the spirit a better life and that there is nothing to fear, they look upon death with horror and will go to the most extreme measures to preserve life. Even the imbeciles, the hopelessly injured and the crippled are preserved, instead of being mercifully disposed of, as is our custom. And their doctors will cut their bodies or their limbs into bits and will leave them crippled or helpless for the rest of their lives, merely to save them from death. It is not

the fear of pain, for they endure a hundred times the agony of death in order to avoid death. Mainly, I think, it is lack of faith in what they hold is their faith. They are never quite sure that their religion is the right one, that their spirits will be better off, which proves how much better it is to have but one faith for all, as do we of Sonko-Huara. And yet, in spite of their dread of death for themselves, they regard the deaths of others quite callously. They ruthlessly destroy thousands of their fellows in a war over some petty trifles or to satisfy the machinations of some men who avariciously desire to add to their power or their wealth. And they do not hesitate to put their fellows to death for the violation of certain laws which they themselves make. Though they thus constitute themselves the judges of their fellows, and claim the right to take that, which they cannot give and cannot restore, yet on the other hand, they will not permit one of the number to take his own life, when he desires death for any reason.

"AND while they see fit to meddle in many, in fact, most affairs of their fellows, and to subject themselves to innumerable ridiculous rules and regulations of no importance to themselves or to any one else, yet they avoid regulating and controlling the most important of all things—the births of their offspring and their rearing.

"Unlike our young that are incubated artificially and under scientific rules, the offspring of the Suarians are born alive, and each mother rears her own. Unfit parents are not only allowed to mate and to produce young, instead of limiting the reproduction of the race to scientifically selected parents, neither of whom is aware of the other's identity as with us, but they are permitted to rear their own misbegotten to maturity. As a result, there is no steady weeding out of the mentally and physically unfit, nor a gradual improvement of the whole race. Moreover, the puny, weak, imbecile, crippled and otherwise imperfect offspring are not only permitted to live, but are sedulously cared for, and every effort is made to keep them alive in spite of nature.

"As a result of this, no two are alike mentally, physically or in training, yet, when these strange beings educate their infinitely varying offspring, they are treated as if all were identical, as if all, like our own, had been scientifically and artificially produced, incubated and reared. There is no attempt to educate and train the young according to their aptitude or their suitability for certain careers. There is no such thing as saying this young being has peculiarities to warrant his becoming a mechanic; this one should be an artist, and then regulating their education and training with that end in view. No, all are put through the same courses of studies, and the ultimate career of each is left to the parents or to the immature being's choice. In this, as in nearly all vital matters concerning these inconceivably inferior Suarians, there is no system, no certainty; everything is left to chance.

The young Suarian, who decides to become a scientist, may become a good scientist and he may be a failure, it is a question of chance instead of being predetermined by searching analysis of his mentality, his physique, his origin and every other factor. Yet in nearly every other respect these beings are surrounded, buried, overwhelmed with laws. Numbers of beings are ceaselessly laboring to make laws and are being given great quantities of the metal discs called money to make these laws. So many have been made in the past and so many are being made each day, that not even those who make them can remember them. For that reason they are preserved in massive volumes. And if those who make the laws are ignorant of them, it is natural that the other beings, who have no knowledge of what laws have been made, should be quite unaware of them. As a result, everyone is constantly violating some law. But this does not appear to matter, for apparently most of the laws are made to no purpose. Yet there are certain laws that may not be broken with impunity save by certain favored beings, and many of these seemed the most unreasonable and needless of all. No being may take that which belongs to another, even though he be starving and the other has more food than he can use; even though he has nothing and the other has much; even though he takes that which he must have in order to live from one who has taken more than he needs from some other. If a being transgresses this law he is set apart in a cubicle by himself, and is given abundance of food and is cared for, so that by his punishment he is rewarded with that which he sought to obtain. Yet he could not be thus housed and fed and provided for otherwise than by violating the law. But the being from whom the possessions have been taken receives nothing in return, nor is he who is set apart forced to return that which he took. And neither may the being who has been thus robbed of what was his, lay hands upon him who took it, nor take from him aught in return. So it would seem that the violator of the law is rewarded and he who suffers is punished. Neither may a being take the life of another being, no matter what provocation he may have, for if he does, then the law may take his life. Even though the one whose life is taken by the being who has been wronged is of the most inferior class and of no value to the community, whereas the being wronged is of the highest and most intelligent, yet the law demands that the valuable life be sacrificed. Yet may those who are favored, take lives as they may and suffer nothing.

"Among these beings there are certain ones whose duty is to see that the laws are not broken, yet often they are themselves the most ignorant of laws and the most inferior in intelligence among the beings. Yet should these beings, in their minds, imagine some being has violated some law—though its violation is not punishable by death—and the one suspected, being innocent, resists, the other may take his life with impunity. Nay, more, if the being employed to enforce the laws attempts to take the life of one violating the law, and instead destroys law-abiding beings who by chance are near at hand, he is not punished for having so destroyed them, nor can their families secure recompense. No, like other matters that concern life and death and even more important things, this too, is governed by chance.

"In the marriage also, which is the mating of the males and the females of these strange beings, all is governed by chance in the same manner. Neither science nor law enters into the beings choosing their mates, but when chosen the law declares them mated. Yet, should they, one wearying of the other, or finding the mating to have been ill chosen, desire to find other mates, they may not do so without breaking a law and being punished therefor. Yet, strangest of all perhaps, is a law that declares these beings may not partake of certain liquids of which some of the beings are fond. More yet, this law prevails in some portions of Suari and not in others, and of all

the laws this is the most often violated. Indeed, few beings there are who do not violate this strange law that controls the beings' own stomachs, and in so violating the law, they appear to gain much delight and pleasure. Though you may find it hard to believe, yet they will go to great trouble and expend many pieces of metal in order to violate this law, not so much that they are desirous of imbibing the proscribed liquids, but to show their derision of a law which they caused to be made.

"For a long time after I had been living among the whites I marveled greatly at these beings remaining so primitive as to need laws which we of Sonko-Huara abandoned ages ago as worthless things and as tending only to corrupt the morals of officials. But most of all I marveled that, having paid beings to make the laws, and laboring to obtain the metal wherewith to pay others for enforcing them, they should desire to break them at every turn and should find delight in so doing. But having learned more of the whites' ways, and having seen their amusements, I wondered no more, for I then saw clearly that such laws were made to provide a source of amusement, or as they call it in their tongue a 'sport,' sometimes also called a 'game.'

CHAPTER IV

Certain Traits Are Universal

"BEFORE speaking of these amusements of the Suarians, I must tell you something of their strange characters and habits. Though they are so filled with conceit that they imagine themselves the superiors of all other races, even the superiors of all beings in the universe, and though they boast that they rule Suari, yet do their females rule them, and the strongest submit to the rule of weak, illiterate, unintelligent beings. Still, in a way, the whites do rule Suari, for so loudly do they cry out to all that they are the lords of their planet, that the others are made to believe it to be the truth and so submit to their wills. And though during my stay on Suari I lived for most of the time amidst these whites and mingled with all kinds, yet never could I learn why they should be so exalted in their opinions of themselves.

"Of all the inhabitants of Suari, they are the most superficial, the most artificial, the most inconsequential, the most illogical and paradoxical. They are as aimless in their lives as butterflies, as casual as drifting leaves. Like hordes of ants they scurry about, rushing madly to save a minute of time, yet in the midst of this wild bustle they will stop and gaze for hours upon some simple childish thing. Their lives are one ceaseless round of toil, for so primitive are they and so badly organized and so jealous of one another that they must toil to live. But even when by toil they have gathered more of the metal discs than they can use in their lives, yet do they continue to toil, working to live and living to work, but constantly crying out for a rest, for a chance to live without thus toiling. Yet when they cease for a space to labor, they entertain themselves by toiling. Even when, weary with the labor of day, they have a chance to rest, they spend the night rushing about, each male with a female, in great crowds, running and prancing over a floor, though they do not win the metal discs by so doing. Or when there is no need of toil, they will hurry and pant for great distances in the hottest sun, laboring to strike a small globule with a crooked stick, or perchance with their feet kicking an object about and fighting amongst themselves, or striking a ball with a club and then dashing swiftly away trying to outpace the ball. Always they are laboring, even fighting to outdo something, even if by so doing nothing is gained. They strive and labor to outdo one another, and each toils to win more of the metal discs than the others, and they take great joy in watching two of their fellows struggle and fight with their hands until one outdoes the other and thereby wins vast stores of the metal discs and bits of paper they prize so greatly.

"To these beings of Suari nothing seems to afford so much pleasure and interest as for some one of them to outdo some other one, yet it is a foolish and ridiculous thing, for always, as fast as one outdoes another, so, surely, another will outdo that one. They even force the four-footed beings to strive to outdo one another, and because these beings are more intelligent and are superior to the others, and will not waste their strength by foolishly laboring to surpass one another, the two-legged beings mount upon their backs and beat and force them to do their bidding.

Often times too, these Suarians will remain for many hours seated at tables and passing bits of colored paper from hand to hand, and going without needed rest and sleep in a mad attempt to outdo one another in securing certain of the bits of paper. Many other strange ways do they have of occupying themselves, yet one of the strangest is that they will flock in great herds unto certain cubicles of large size, and will give up stores of the metal discs to gaze at certain of their fellows, both males and females, who standing upon a platform, do and say exactly the same things that these beings do each day. Moreover, when these beings cannot see their fellows thus repeating their actions and their words, they will flock to other places wherein are pictures of beings doing the same things. These pictures were at first a great puzzle to me, for I thought that they were reality and were like unto our vision-disseminators, for they both moved and spoke. But soon I found they were accomplished by means of machines, and though cleverly managed, were not real but merely images that were made to appear at will. Very often both the beings who appear upon the platforms, as well as the pictured beings, do and say things that are in violation of the laws, whereat those who watch show great pleasure and shout aloud and strike their hands together in delight, for so illogical are they that though they may make laws and may punish those who transgress them, yet ever are they overjoyed to see the laws broken. Yet in this are they no more illogical than in many other ways. Thus while they will give many discs to be delighted and made happy, they will give an equal number to be made sad, and of their own will they will gaze upon sights or will harken to music and because of these will weep and will find joy in weeping, which led me to feel at times that these strange beings are all imbeciles.

"Yet they do most amazing things and perform feats that we of Sonko-Huara cannot equal. They can project their voices and all other sounds for vast distances through the air and it was these that we heard here in Sonko-Huara, as I surmised), this being done by some means akin to the manner in which I transported myself to Suari and back. By devices which I do not fully comprehend even yet, the beings alter the sounds to electronic forces, by a reversal of the process transform the forces

into sounds, just as I may change a solid body into free electrons, and then may reform the free electrons to reproduce the original body.

"And though they have never learned the secrets of our vision-disseminators and audio-extensors nor of our projectors by means of which we may move swiftly from spot to spot and may hear the voices and see the forms of others at great distances, and though they have not yet learned to draw all power, all sustenance and all that is needed for life directly from the sunshine and the atmosphere, yet they have devices that serve many purposes and that are unknown to us.. Perchance, by the time their planet has been exhausted, as has Sonko-Huara, and the Suarians have by necessity been forced to develop their intelligences and have cast aside the foolish and inconsequential things, and have learned that uniformity of purpose, thought and act is essential to existence, they may reach to a plane comparable to ours at this time. I have already told you of the strange machines that rush over the earth and by means of which they move from place to place. In addition, they have other great machines that can move only upon metal rods laid upon the earth, and they possess immense projector-like devices that fly through the air.

"Unlike our projectors that may remain poised at any height and which are operated by the atomic power, these draw their power from fuel burned within them, and if by chance the fuel is exhausted or if any portion of the mechanism goes wrong, they crash to the ground and are destroyed.

"IT is written in our histories that our ancestors, some thousand Chukitis in the past, used similar means for traveling, and so it is possible that a thousand Chukitis hence the Suarians may learn to make projectors. But Suari, being so much greater than Sonko-Huara and hence with greater body-attraction, presents problems that we of Sonko-Huara do not face. Thus upon Suari there are, as all know, great bodies of water, and to cross these and to go from place to place separated by them, the beings use immense machines, carrying vast numbers of Suarians, that move swiftly upon the surface of the water and do not sink within it even though they are made of metal heavier than the water. This to us of Sonko-Huara seems more wonderful than would our projectors or our vision-disseminators to the Suarians, for we, having no great masses of water, and no need to cross such, know little of such matters, and in all things pertaining to water, the beings of Suari are in advance of us. Yet could I, even with my ignorance of such things, see plainly that in all these matters as in everything else the Suarians waste far more than they use, and do many things for the benefit of their own pride and pleasure rather than for the benefit of the race and posterity as a whole. Thus the structures in which they dwell and which, clustered together, form those spots that we of Sonko-Huara long ago recognized as made by intelligent beings, are often made of vast size and beauty, towering unto the skies, whereas for the purposes of the beings' lives and labors no beauty is required, and cubicles of no greater height than would accommodate the beings would serve as well. For that matter, such small structures, separately placed, would serve better, and with the sunshine and the air would greatly preserve the health of the dwellers within. Yet in their self-pride and glory the beings will erect the great structures and will nest them together by thousands, thus shutting off the sunshine and air and rendering their dwelling places as dark and noisome as caverns in the earth. And the material that is needed to make such great structures would serve to make many thousand smaller cubicles for those beings who have not enough of the metal discs to obtain shelter. On the other hand, so commercial are the minds of these beings, so fixed on matters that result only in gain to themselves, so selfish in their attitude, that science is regarded with little respect and often with scorn. And those beings who have amassed great quantities of the metal they crave will give freely of what they have for such pleasures as they desire, but will bestow none upon those beings who delve in the mysteries of science and who devote their lives to the betterment of others by studies and by writings. There are some few who will bestow their discs in this way, else all the Suarian scientists and those of great intelligence would succumb.

"Yet even the scientists are ever filled with the conceit that possesses the two-legged inhabitants of Suari, and most of all, the whites.

"Though they possess means of studying the planets, and have devoted much time to studying our own Sonko-Huara, yet they know nothing in regard to them. Those signals that we of Sonko-Huara arranged to draw their eyes and to let them know that our planet was inhabited, were seen by those on Suari, yet they deemed them not signals—feeling assured no beings more intelligent than themselves could dwell here—that our signals were but natural formations. And then to apprize whatever beings might dwell on Sonko-Huara that more intelligent beings inhabited Suari, they caused great numbers of lights to be placed at night—which we saw—meaningless things carrying no message. And having projected their voices into space and having received no response (for they stupidly failed to arrange for replies and even failed to let us know they were striving to communicate with us) they decided that there were no intelligent beings.

"So conceited are they and so filled with their own importance and the belief that they are lords not only of Suari but of all the Universe, that they cannot conceive of any other form of intelligent beings. To them the denizens of Sonko-Huara or of any planet, must be like themselves—with but two legs and two arms, the same bodies, heads and features—or, in the minds of some few, perchance like certain four or six-legged creatures of Suari.

"And nothing can convince them of the contrary, nor can they be convinced that an inhabitant of Sonko-Huara could do what they cannot and visit another planet as I have done. For a long time after my arrival upon Suari I said nothing of who I was or whence I came, thinking it better to learn their ways and all regarding them, by mingling with them as one of their own kind. And when, after having talked with their scientists and those credited with being the most intelligent, I learned how vast was their ignorance of Sonko-Huara, I sought to set them right, none would listen to my words. In vain did I endeavor to tell them of the true facts, of how we of Sonko-Huara lived, of the customs and our ways, of how we obtained our power and our sustenance, of how our race was propagated and ever improved by science, and of how those strange marks, which they had thought were canals, were but the tracks made by our small areas of water as they were dragged across the surface of our planet by our two small satellites.

(*Continued on page 371*)

The Driving Power

By Miles J. Breuer, M.D.

Author of "The Man with the Strange Head," "The Gostak Distims the Doshes," Etc.

NOW that the firmly established Bohr planetary atom seems to have succumbed to the Schrödinger wave atom, who can say definitely what are the possibilities of intra-atomic power? Present-day writers of scientific fiction must needs tax their imaginations these days and quickly tell their stories, for fear the startling things they foretell will come to pass before their stories are published. But "The Driving Power," despite the fact that it is based on the Bohr atom, is still sufficiently "different" and amazing to warrant its publication. Also, Dr. Breuer may still be found to have been right, some day.

Illustrated by WESSO

Science and Living

WHEN Professor Grimm laid down his work and decided to go home, he changed into a different man. It was like a transformation from Dr. Jekyll into Mr. Hyde.

"Seven o'clock. Getting dark. Time to quit," he sighed with regret at having to part with his apparatus. He picked up some pieces again, fitted them into the big machine, lingered awhile, and again tore himself resolutely away.

All day while he worked in that laboratory, he was keen, alert, full of enthusiasm. His pencil drove busily over sheets and sheets, leaving them covered with calculations too abstruse for ordinary mortals; his fingers and eyes searched busily among the leaves of his library; but especially, most of the time he hovered swiftly, skilfully, devotedly all around and among that vast and complex stack of apparatus in one end of the big room. He had as much energy as the huge waterfall whose roar could just be heard through the windows and which supplied him with inexhaustible power for his experimental work in intra-atomic physics. His eyes shone brightly, and you could see that he thoroughly loved the work.

Then came quitting time. A vacant, discouraged expression stole over his face and over the whole of his figure. You would have thought he had nothing else in the world to live for. He drooped like a lover driven from the side of his fair lady out into the wilderness.

Perhaps you think he was one of those dry, lifeless scientists who care for nothing, know of nothing except archaeopteryx or eclipsing variables. The careless hang of his clothes, his unshaven face, his absent-minded behavior, might have confirmed the idea that he was so absorbed in his work that nothing else existed for him.

But Professor Grimm was not that dry. There seemed to be a good deal of romance left in his make-up. Otherwise, why did a wistful look come over his face, and why did his steps lag when he passed the motion-picture theater where thrilling scenes from some famous love-story were portrayed on the billboards? He almost stopped before the picture of the hero in doublet and sword, a girl on one arm and an enemy at bay with the other. But he pulled himself together, shrugged his shoulders, and forced his pace forwards. Again he forgot himself for a moment or two, when a very young couple went by, so devoted to each other that they were unconscious of any surroundings; and again when the window of a kodak store displayed pictures of people camping in the mountains. But each time he braced up and went resolutely on. A man who is absorbed to completion in dry work does not feel that way when he catches glimpses of some of life's pretty things.

He reached home dejected and tired. His home was a bright resplendence of rooms, in one of which reigned a glittering dinner-table. His wife appeared, a glorious, tripping vision, delicious to look at, a consummate product of all the modern arts that make a woman beautiful; width of eyebrows, curve of mouth exactly right; all the lines and proportions of figure correct; all details of dress perfect.

"Hurry, dear" said the tinkling, silver-bell voice. "Guests will soon be here."

¶ *The scene before him rose again . . . everything was exactly the same.*

Silver tinkle, indeed, thought Professor Grimm. It was a cold and distant tinkle, and the tone of it said to him, if the words did not, that he was late again and that his appearance was not presentable for the distinguished social captures that were expected. Thus it was every evening; often the impatience at his tired appearance was hardly concealed. Some evenings he would appear among them; at others he would not. It did not seem to matter; he wasn't noticed much, providing he didn't get in the way. The gayety always lasted till late; and he would leave the guests and go to bed early, because he had work to do in the morning. His wife would sleep till noon, and he would never see her until the next evening dressed for another function. The occasional opportunity for conversation between himself and her was occupied by her intense social ambitions and a pouting impatience at the work which held him and kept her from showing him off to her society audience.

"I'll come over to the University some day and break up those machines," she complained. "You never want to go out with me."

If he had not been a Professor, accustomed to shaping intangible ideas for practical use, he might have retorted that her social nonsense was keeping her away from him; that his work was the thing of real importance. But he was a man of policy: peace at any price, since war could never hope to gain anything, anyway.

"I have a serious problem on," he would explain. "If it works out, it will bring in money."

That made her happy. Money was needed for beautiful clothes and for social climbing.

Professor Grimm had no wife. That was the way he felt about it. No *companion* to share his life's problems, ambitions, pleasures. He felt rather like an elephant quartered in a butterfly's house. That is why movie love or the sight of real lovers made him melancholy.

He clung to his work with the tenacity of the absent-minded professor in stories. His researches in the ionization of solid bodies, his concrete realization of perfect gases with high density—these had to be his wife and love. They took the place of the romance that he missed. For, deep in his secret heart, concealed under that dry, absent-minded exterior, he was intensely, boyishly romantic. Fairy princesses and adventures in distant lands occupied his inmost thoughts. Outwardly he consoled himself with work.

"People that are too happy," he reflected, "never make much real progress. Happiness has a tendency to remain satisfied where it is. Perhaps that is why I have gotten so much further than many of my colleagues who are older than I. Perhaps if I were as happy as Puckner—going away on another trip with his wife; they've had half a dozen honeymoons already." Another far-away look in his eyes, followed by a shrug of resignation. "If I were like that, I should never have worked out the Integrator."

He contented himself with the thought that it is a fine,

AUTHOR'S FOOTNOTE: The technical aspects of Professor Grimm's work involve the most difficult and complex considerations of modern intra-atomic physics. To include them in the text of this story, with which they have nothing at all to do, would bore the general reader; and, for that reason I am omitting them from the story itself. However, for the benefit of the scientific reader, I append the following abstract that I have made from Professor Grimm's notations on the subject.

He received his original idea for this work from some of Eddington's writings on the state of matter within a hot star (*Stars and Atoms*, A. S. Eddington, Yale University Press, 1927). There, matter is very dense and exists only in its simplest forms. There, atoms are not complete for very long at a time, for the vast volumes of short electro-magnetic vibrations (X-rays) are constantly displacing the electrons in the outer orbits (see Bohr's articles in the *Philosophic Magazine* for July, September, and November, 1913). But these displaced electrons are free only for a short time, and are quickly again absorbed by unsaturated atoms. However, they are again quickly displaced by X-rays, and so on, *ad infinitum*.

It occurred to Professor Grimm that if X-rays could be generated in the laboratory in sufficient density, and allowed to exert their effect on matter which was less dense than that in the interior of a star, the free electrons would get far enough away from the influence of unsaturated atoms so that they would remain free. Then, as successive electrons were displaced from the atom, the character of the atom would change, and the change would be recognizable in the laboratory by physical and chemical methods.

As a matter of fact, this is actually what occurs in a Coolidge tube (see page 122, *Within the Atom*, John Mills, Van Nostrand, 1923), and it amounts to nothing else than the transmutation of one element into another. The ionization of matter by X-rays has been demonstrated with graphic vividness by C. T. R. Wilson, who shows photographs of ionization-nuclei in water-vapor along the path of an X-ray (see page 102 of Mills' *Within the Atom*). Professor Grimm was fascinated by the possibility of making definite physical and chemical changes in matter by this method, and this was the modest beginning of his sensational achievement. He supplied the first actual experimental verification of Bohr's theory, first by demonstrating that as each quantum of energy is lost by the electrons revolving in the outermost orbits and as the orbits decrease in size, the nature of the atom changes, and therefore, the nature of the matter which it composes undergoes chemical transmutation.

Thus, if a carbon atom with twelve revolving electrons loses one quantum of energy (liberated as X-rays and registered and measured with the crystal gratings and X-ray spectra of H. G. J. Moseley and deBroglie) and one of the electrons falls into the nucleus, it contains but eleven revolving electrons, and becomes an atom of boron. This is a process which in Nature requires ages of time; Professor Grimm hastened it experimentally. But his great triumph was its reversal: the *addition* of a quantum of energy to the atom, and the *addition* of a revolving electron.

For one reason he had the advantage in this work over any physicist in the world: he had at his disposal practically unlimited power. The huge waterfall was surrounded by State property and its use was restricted by donation to the University. Lighting and power for the campus utilized but an insignificant proportion of its energy; a million horse-power was available for experimental work. With this, and his three banks of six-foot Coolidge tubes, Professor Grimm was able to generate X-rays which would compare in volume and intensity for experimental work, with the X-rays in hot stars. With a tube modeler after that which Millikan used in his photo-electric emission experiments, he succeeded in abstracting electrons from atoms, and in adding electrons to atoms. The principle is simple: if an atom receives the increment of an electron, it radiates one quantum of energy (X-rays); and *vice versa*, if a quantum of energy is shot into the atomic system, the increase throws off one electron. For making any element out of any other element, it required merely a standardization of quantitative technic, a straightforward though tedious matter to work out.

brave thing to be a scientist, and to sacrifice living for scientific work.

The Invention

IN the morning he came into the laboratory, divested himself of the outer world with a sigh at its emptiness, and stood in front of the Integrator, ready to plunge into the joy of another day's work.

What was this Integrator, which occupied the Professor's days until he grudged time from it for his classes; which occupied his thoughts at night, his lectures, his private conversation? What was this astonishing thing, before which its own creator stood in awe, scarcely able to believe the work of his hands?

This morning he was testing it out again. A number of times he had made tests to confirm the accuracy of his "pattern" equations, but thus far he had always witnessed its amazing performance alone. While the huge generators were starting up and the glowing platinum targets were warming, he sat at his desk and worked his slide-rule and jotted down figures. Then, with his eye on a stop-watch that showed fifths of a second, he moved switches and pressed keys. There, in the middle of the room, the air swirled in a spiral and became nebulous. The cloud condensed, and there lay a sphere—or a brick, or a bar; of gold or clay or ivory, or of fibre or jelly.

This morning he was practicing on more complex things. He spent more time with his pencil and slide-rule, and got a growing flower, a wriggling worm, merely by substituting different values for the terms of his equation and setting his experimental quantities in accord with the resulting "pattern." A bold effort resulted in a scampering little monkey, which darted chatteringly about the big room, until Professor Grimm shut off the power, whereupon the monkey melted away and disappeared. He tried another combination, and there appeared a little machine, working busily away; and when he shut off the power it melted, dimmed, and was gone, with a rush of air out of the windows and an electrification of everything in the room with the dissipated charges.

That sounds like some tale of sorcery out of the Middle Ages! Or like the words of some writer who has more imagination than scientific training. Yet it is physics, very accurate, very matter-of-fact, and withal very dry for the non-scientific reader.

For the benefit of the latter, I am making a brief review of the process, which is described technically in the footnote. Professor Grimm had accomplished more in the generation of large volumes of short-wave X-rays than any man of his time. That was what became of the tremendous power of the huge waterfall, the power that went into his laboratory.

Short-wave X-rays, as is well known, displace electrons from the outer orbits of wandering electrons, say of gases, leaving an unsaturated atom with an intense avidity to combine.

AUTHOR'S FOOTNOTE: That is the fundamental principle of the Integrator. But, there is still more to it.

Possibly the ease with which gold or other valuable metals could be thus made would have been the first thing to appeal to the average worker. But Professor Grimm passed that by with hardly a thought, with his eye set on far more thrilling possibilities.

The idea of a unity of evolutionary processes is gradually being built up. The conception seems to be too big for some of our scientific men, but they will have to grow up to it now. The laborious presentations of such men as Horatio Hackett Newman and Henry Chandler Cowles to the effect that evolution, instead of being something peculiarly limited to organic life, is in reality one continuous and identically uniform process from the dissociated ions in a hot star to the gray matter of a college professor—this idea need no longer be offered with fear of ridicule.

Grimm's work went on to verify it experimentally.

Grimm started with the bold idea that *life* adds nothing essentially different, when it steps into the evolutionary scale; not even qualitatively different. The appearance of *life* in the evolutionary scale, which matter undergoes, is not an abrupt break, not a radical change, any more than the appearance of the carbon chain or the carbon ring denotes a radically different kind of chemistry from that of the other elements. Life is but a property of molecules of a certain complexity and certain arrangement; when this complexity and arrangement appears in the evolutionary series, life is present. The old idea that *life* or its germs must have come from somewhere belongs in the museum with phlogiston and the indivisible atom.

So, with his modification of the Millikan tube and his cataracts of short-wave electromagnetic vibrations, Grimm took the molecules of enclosed air, added two electrons to the carbon atom to make nitrogen; removed a common electron between two atoms and condensed them to molecules; built up a protein molecule; removed common electrons by the hundred between molecules and built up complicated compounds. The removal of the "common electron" was the key idea, and is quite analogous to the removal of one molecule of water from two molecules of ethyl alcohol with the formation of ethyl-ether.

By pouring electromagnetic energy into the electronic orbits, he produced an infinite speeding up of material evolution. His product was *protoplasm*.

And when he had protoplasm, *life* was there along with it.

Nor did he stop there with his stimulation of evolution. By continuing the supply of electromagnetic energy, he speeded up the evolution of his organic mass—still the same essentially qualitative process which had built up his inorganic bodies.

He carried it on up to complex living beings.

Possibly the greatest achievement of this genius, whom we have found so pitifully human in everyday life, was to reduce the quantitative technic of this process to mathematics.

He took Planck's simple quantum relationship:

$$u(\lambda) = \frac{8\pi ch}{\lambda^5\left(\frac{ch}{eRT} - 1\right)}$$

and built it up as functions of his spark-gap distance and milliamperage, so that he could produce any kind of changes he desired in the evolution of any kind of matter, backwards or forwards.

He named his equations "electron patterns"; and after they were complete, he devised further experiments to test them. In the course of these experiments to check and verify the "electron pattern" equations, the Integrator came into being. It was the experimental apparatus which worked in the huge room as its condensation-field, and which was able to intensify the processes of inorganic-organic evolution to such a degree that a cycle from dissociate electrons to organic life could take place in a small number of seconds in large masses of matter.

With his broad streams of short waves, Grimm had a hitherto unparalleled opportunity to observe the behavior of these unsaturated atoms. His vast numbers of ions condensed; his gases were turned into solids of differing composition. He worked with air in his early experiments, and when he got through he had masses of marble; marble probably, because the cosmic cloud consists chiefly of calcium.*

Thus far the idea is simple enough, though technically difficult. It was the first step to the Integrator. His block of marble was shapeless. Could he predetermine what shape it was to assume? Could he determine on something other than marble? Could he make a complex mass of a dozen or more elements?

From that to the finished Integrator is a long story: the relations of the components of a complex body and their evolution from simple ions; the accurate control of the bombardment of free atoms by short-wave X-rays; the ability to pick off one electron from a nitrogen atom, or two or three, and of selecting free atoms to attack with the short waves—it is tedious and mathematical stuff. Curious indeed were the bodies he built up by ionizing air, with its carbon-dioxide and water-vapor, rearranging and condensing ions; fantastic blobs of stuff that twisted and writhed and then changed on to something else.

Is it any wonder that the long and thrilling work absorbed him intensely? Yet, how could any man endure that nerve-racking concentration unless he had been driven away from the world's distractions by some sort of despair? However, the achievement was worth it. He gasped when he thought of what that row of short-wave tubes could do for him.

For now, since he worked out the proton basis and the electron patterns, he had an automatic control of wave-length and radiation density, and was beginning to learn to make what he pleased out of his condensed ions. It was merely a matter of getting the pattern right to start with. The object would then develop itself, depending only on a sufficient supply of energy.

That evening he walked home in a daze. His eyes even missed the spectacle of here and there a man with a lady intimately beside him. An idea had suddenly struck him! An idea that stunned him with its force!

It was an idea of what the Integrator could do for him, and was even greater than the idea of the Integrator itself. He looked out on the gray world that had so disappointed him, and his heart leaped wildly with anticipation. Now he would have happiness. A keen brain and hard work can grind happiness even out of this bleak world.

His wife was all ready to start to a theater-party, her beautiful gown and sweet voice making her seem distant like a lady in a story. No, he did not want to go along. He never did want to go along and be displayed, but tonight he wasn't even in the same world. His wife went on to the theater-party, and he, with head throbbing and heart racing with excitement, went back to the laboratory.

He had cleared the vast, auditorium-like room; and the Integrator stood assembled at one end of it. All else was vast areas of bare floor, wall, and ceiling. He opened all the windows wide; he would need to draw on the atmosphere for large quantities of matter. And he sat down at the pattern-board of the machine.

About an hour of calculation was necessary; pencil, slide-rule, and book of integrals were kept busy. His results came out in milliamperes and spark-gap lengths; and he manipulated the switches and rheostats. There in front of him grew his dream.

First, swirling nebulae. The vague shapes took form in the depths of the fog. They rolled like clouds of smoke and changed. Soon he could see trees. Soft, rich, green grass in their shade; flowers and birds in their fragrant depths. A sheltered dell, a picturesque cottage, and through its windows, glimpses of a brilliant, luxurious room, with draperies, lamps, and a divan.

And last, and greatest of all, a beautiful woman! She materialized in the doorway, with a melting smile and a simple gown of soft silk; she waited for him as he set the machinery to continue running, and walked into the picture.

"Are you real?" It sounded foolish, but he couldn't help asking it.

"Real, and waiting for you." She held out both hands to him.

They sat together on a divan. She was real. Her hands were soft, but there was a firmness in her handshake that he liked. He touched her shoulder and her head. They were real. She smiled at it.

"Do you believe I'm here now?" she asked.

"What is your name?" was his breathless reply.

"Amaranth."

"It's good. Sounds just like I feel."

She brought him lemonade. He wished he were more carefully dressed, for she seemed interested in him; her eyes were always on him. She was intelligent and talked well. They talked a good deal in the preliminary process of getting acquainted. She was cheerful, and had a good sense of humor, and made him feel rested. The evening passed, and he forgot; forgot problems and troubles, and the gray world. When a man can *forget*, he is happy. Professor Grimm had rarely been happy.

"I shall see you again," they both said when he took his leave.

Before shutting off the power, he checked his patterns most carefully. He was satisfied with her and with everything in the picture just as it was. Beforehand he had not been sure just how it would come out. Now he was anxious that a repetition should be accurate. Then he shut off the generators gradually, one after another. There was a dimming and a thinning of the scene of paradise before him. (He had a vague, fleeting feeling, that was gone in a moment, that he was killing, annihilating somebody. But he reassured himself that he could reproduce it all tomorrow.) It faded and was gone. Only the bare room was left. There was a momentary sense of pressure in the room as the disintegrating molecules expanded, and before the windows released the excess of atmospheric density. The room was bare, just like the world. He went home through the late night, his nerves in a daze of fatigue from his unusual experience; but it was a welcome fatigue.

The next day seemed endless to the Professor. A blaze of bronze hair and the softest of round arms would not go out of his mind. Even when he was busiest, he could hear in the background the low, musical:

"I shall see you again?"

*By "cosmic cloud" is meant the loose atoms that wander about in interstellar space.

That evening he dressed carefully and came out as spruce as one of his students. Back in the laboratory he sat by his patterns and switches. The scene before him rose again, the idyllic forest cottage, the lovely Amaranth at the door. Everything was exactly the same. The patterns were accurate.

This time the eager pressure of her hand made his heart leap. Her eyes rested admiringly on his natty figure. Dry, scientific man, eh? If so, why should the timid hand resting on his sleeve thrill him so intensely? She brought him a grape drink this time, and cookies, and a cushion on the divan. She sang a lilting song at the piano. Professor Grimm was happy and the world was no longer gray.*

The Adventure

AND so, the "electron-patterns" were set many times, and much power was used from the waterfall. The Professor, after a hard day's work would take a perfunctory turn at home, and then hurry to the paradise waiting for him. There were long hours of sweet companionship, wonderful communions of perfect understandings in all fields of thought, lovely arms about his neck, and a song in his heart like the music of the spheres.

He was a changed man. His friends noted it. Even his wife noted it.

"Is the work going well?" she asked. "You look jollier than you used to."

"Another invention," he evaded. "If I can sell it to some corporation like the Amalgamated Amusements, there ought to be a million dollars in it for us. Come and see it."

A million dollars sounded good and she came. He made flowers, dresses, automobiles spring out of nothingness before her eyes. But the wonder of it was not as great as the million dollars.

His students talked him over between cigarettes.

"Grimm's getting cheerful. Remember how he used to go around with a load of gloom? Looks like a sunrise now."

"They say he used to have trouble with his wife. Maybe they've fixed it up."

"Well, he's sure been easier with the red ink lately. His course used to be the only one that gave me any work."

He grew popular with the students. He was excellent company in faculty gatherings. His friends were gratified and delighted at the transformation. Some of them had felt sorry for him, in view of the pace his wife led him and of his intense concentration on his work. Now he sought company, and was a hail fellow well met, instead of a ghost at the feast.

Weeks lengthened into months, and the Professor was still happy.

"Have you sold your invention to the Amalgamated Amusements yet?" his wife asked once or twice.

"No. I'm still working on it. I'm not satisfied to let it go as it is."

"You're too particular. It is taking more of your time than ever. You don't even come home now. I'll come over some day and take you away from it. I'm getting jealous of your old machine."

He felt guilty. People thought he was working terribly hard. He'd had some work in mind on solar power, and it was getting time to be at it. But he couldn't seem to compel himself to get to work. He was happy and satisfied. He didn't want to work.

Some of his faculty friends also talked him over.

"Grimm is losing his grip. His classes are entertaining and interesting, but they are not clear and forceful as they used to be."

"He's been talking of solar power, and I've looked for something good. But he doesn't seem to be working. The apparatus in his laboratory hasn't changed for months.

Professor Grimm could not help eventually hearing these things by roundabout paths. He sighed. For a moment the world all seemed gray again.

"It must be that progress and content do not go together," he mused. "Happy men never do big stuff."

He brooded and remained sunk in melancholy for several days during which he never touched his "patterns."

The Decision

FINALLY, one evening he came into his laboratory and started the generators. Things were all wrong. He was morose and crabbed. He couldn't stand it; he had to see her again.

In her arms, there in the depths of the forest, his soul became quiet again. Again he forgot all but her—her bronze hair, her melting smile, her devotion to him. Or rather, he almost forgot, for there in the background there was some sort of throbbing, pounding, hammering——

The pounding kept up. It seemed to come from another world.

Someone was at his laboratory door, and was shaking it. Was it locked or not? A flash of fear shot through him. He did not want to be caught thus.

(*Continued on page 323*)

*Author's Foot Note: Before I got around to writing up the story of Professor Grimm, it happened quite naturally that I told it to several people; likewise I let several people read the manuscript before I submitted it for publication. All of these people agreed in demanding to know something more about Amaranth. What kind of a person was she? What did she look like? How did she talk and act? What sort of character and disposition did she have?

They did not stop to think that this is a most difficult question to answer. No one ever met or saw Amaranth except Professor Grimm himself; and he was not willing to talk about her personally. He showed me the operation of the Integrator, "condensed" different things for me, and even created a pair of prehistoric three-toed horses thirty inches high. But I cannot blame him for not wanting to demonstrate Amaranth.

Fortunately, the personality of Amaranth has nothing to do with the main trend of the story of Professor Grimm's search for happiness; a knowledge of the personality is not essential to an understanding of what eventually became of Professor Grimm and the Integrator.

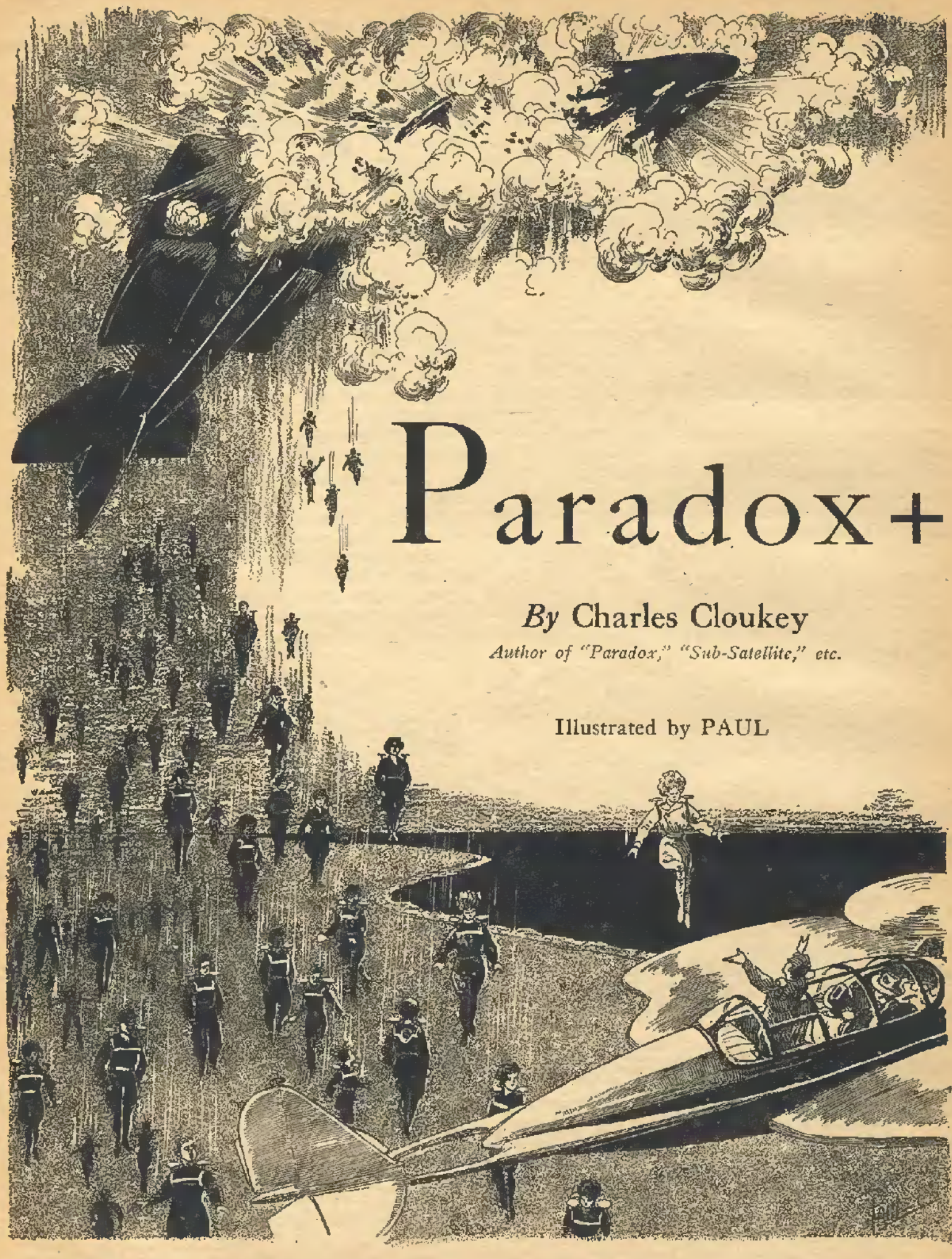
We can, however, make some indirect deductions as to her personality; and this deduced personality casts an interesting light on the operations of the Integrator, and on the process of evolution in general. We know, for instance, that she was to the highest degree agreeable and attractive to him; otherwise he would never have spent as much time with her as he did. Knowing him as well as I do, it is easy to make general estimates about what sort of woman he would find agreeable enough to give that much of his time to, and to make him forget his work and his troubles.

She must have been possessed of a regular and symmetrical type of facial and bodily beauty, and a soft, pleasant voice. She must have been a good listener as well as a vivacious conversationalist. She must have been interested in his ideas and in his work; but must have had ideas and interests of her own. Otherwise, Professor Grimm would never have gone back a second time to see her.

I remember his telling me that she was intensely interested in the manner of her creation. He had explained it all to her; and she was as much interested in it as you and I are in the story of our own creation. I recollect a clear, emphatic impression of her human substantialness. Body, mind, character, disposition were all there complete; evolved at infinite speed in a few seconds; but the product was in no way distinguishable from the natural one.

It also occurs to us to wonder how it happened that Amaranth came out as perfectly adapted as a companion to Professor Grimm as she was. Two explanations are possible. The first is that Professor Grimm must have had a good deal of practice "condensing" things with the integrator before he attempted his final masterpiece; and that consciously or unconsciously, he was able to put together elements for it that would evolve into his desired ideal. The second possibility is that he made more than one attempt, and that on the basis of earlier and less desirable results, he finally succeeded with the effect that he wanted. I have done the best to build up a readable story from the meager information that I was able to elicit on this subject.

M. J. B.



Paradox+

By Charles Cloukey

Author of "Paradox," "Sub-Satellite," etc.

Illustrated by PAUL

¶ By the most daring manipulation I have ever seen, our pilot put us below and slightly to the side of the one who fell, locked his helicopter control . . . opened the door, and reached out to seize the girl.

"PARADOX" was generally acclaimed "one of the cleverest fourth-dimensional and time traveling stories" and requests came in for a sequel. "Paradox +" it seems to us, is even better than the first. Although our hero returned to his own time, intact, it was not quite clear what happened later in that future time. How did the battle end? In this cleverly written and exceedingly plausible sequel, Mr. Cloukey tells more about it.

RECENTLY in this magazine I retold the story that Raymond Cannes told that Sunday night, October the seventh, 1928, to a group of acquaintances at a certain Philadelphia club. I first told of the argument between Sherman and Preston, who, discussing H. G. Wells' novel, "The Time Machine," had wandered off into speculation as to whether or not it would ever be possible to travel into the future or the past. Preston maintained that such a thing was impossible and would always be impossible, while Sherman, disregarding the ridicule of his opponent, expressed the opinion that "time-traveling" might become a possibility at no distant epoch, when science would be more advanced. The debate, though *impromptu*, was interesting in the extreme. Each man brought out several good points.

Then Raymond Cannes told that story which I have retold in print and called "Paradox." He stated that it was true, but he did not ask us to believe it, as he could present no confirmatory evidence. He told how his college chum, Endicott Hawkinson, a wealthy electrical wizard, had found in his mailbox a mysterious mathematical manuscript, which he found contained proof of the existence of the "fourth dimension," and identified it as time. Cannes told how Hawkinson constructed an electrical machine for projecting objects into the future, and how Hawkinson was killed by a fire in his laboratory shortly after he had sent Cannes one thousand and two years into the future, to the year 2930.

Cannes told of his life in that far future year, of his mystification at the circumstances surrounding the origin of that manuscript, which was used before it was made and could not have been made if it hadn't been previously used. He told us of the grandfather argument, and also of the time when he was actually and physically in two different places at one and the same time. He told us not only of those, but of other seeming paradoxes and absurdities he had encountered. He told us that he could not believe the things he saw happen, for his twentieth century mind was incapable of comprehending the complex mysteries of thirtieth century science, which regarded the fourth dimension as simple and elementary, and which dealt with traveling through time as an accomplished and commonplace fact. He told us of Dwar Bonn, the great thirtieth century scientist who had just invented a machine for traveling into the past, as all time-traveling previous to 2930 had been into the future only. He told us of his love for a tall, slender girl of the future, the daughter of the scientist. He told us of the incredible adventure that took place on the monster ninety thousand ton air-liner *Patrician*, en route from Australia to New York. Fleeing from a discussion incomprehensible to him of the mysteries of electrons, protons and photons, he had come upon the girl and had impulsively kissed her. She resented it and struck at him, accidentally striking and breaking one of the delicate life-disks attached to his shoulders. Everyone on the enormous airplane wore those disks. In case of an accident they served as parachutes, extracting power from the supply that was always being broadcast, and using that power to break the fall. Cannes then told us how he had gone in search of her father, the scientist, had found him dead, had captured his murderer in spite of the fact that the murderer was using a stolen device to render himself totally invisible, and how he (Cannes) had discovered that the murderer was a spy from the planet Mars, who later disclosed, unwillingly, that the earth was in great peril, as Martian spies had distributed all over the earth, in its most densely populated parts, enormous quantities of the terrible Martian explosive *brarron*, which possessed the power of being detonated by certain etheric waves. One large quantity of this explosive was in the cargo-rooms of the great plane, *Patrician*, and the radio wave, that was to detonate the explosive all over the world, was due to be broadcast in fifteen minutes, from the great station established by the powers of Mars at the Earth's South Pole. All this information was obtained from the Martian spy by artificial hypnotism. The spy concluded by stating that not one terrestrial being would be alive after three days had passed.

If you have read my account you will remember how Cannes told us that the enormous plane, death-laden with Martian brarron, was abandoned in mid-air, all of the passengers and crew descending to earth by using their life-disks. But Cannes' disks had been destroyed. He had escaped by using the time-machine just invented by Dwar Bonn, which had returned him to the year 1928. You will remember that Cannes' last glimpse of the girl he loved had shown her falling away from the plane, which was loaded with explosive, a very few minutes before the explosion was to take place. But, because of his own escape through the fourth dimension, he had never known whether or not the explosion had ever taken place, never known whether or not the human race was annihilated in those three days in September 2930, as the Martian spy had threatened.

And you will remember how Cannes had found out from old records that his death had been recorded on October 7, 1928, and how he had set the dials on the time-machine to indicate October the *eighth*, and had boasted to us that he had cheated fate. But fate had cheated him, for without his knowing it, the machine had not functioned quite accurately, and he had really been returned to the seventh, the day on which his death was due, (and also the day on which he told the story.) Ten minutes after he had finished his story he was dead. He never knew what it was that hit him. The entire group that had listened to his story saw him killed by a truck a few minutes before midnight.

I have made a hurried and incomplete review of Cannes' story and the circumstances surrounding it, so

that even if you have not read it you will be able to understand the story that follows. If there are points that are not clear to you, a reference to my previous article will doubtlessly make them plain.

MONTHS later my friend William Simons read the story. He laid aside the magazine and remarked whimsically, "You've a peculiar imagination, Cloukey. Just what good it is, I don't know, but it's peculiar. But why did you kill off Cannes at the end? Isn't there enough tragedy in real life without you story-writers? . . ."

I interrupted him annoyedly. I had no just reason to be annoyed, but I was. I picked up my scrap-book and showed him two slightly yellowed clippings from the Philadelphia *Evening Bulletin*. One told of the fire in the laboratory of Endicott Hawkinson, rich experimenter; and the other, dated a few months later, (October 8, 1928), told of the killing of Raymond Cannes, on a street near City Hall, a few minutes before the previous midnight, blaming the hit-and-run driver of a speeding truck. Bill Simons read the clippings and turned to me inquiringly.

"You used the names of real people?"

"And I told a true story. That is, while I don't know whether or not Cannes' story was true, it is true that he told that story to the group at a downtown club, and it is true that he was killed later in precisely the manner stated by the crumbling records he had been informed of, on the day stated, although he thought he had 'gypped the grim reaper' through the fourth dimension."

"You mean you believe. . . ."

"I do, although I occasionally have some doubts. But if that story was a lie, it is the most amazing and unbelievable coincidence in the world that he should die in such a manner at such a time."

"Then why did you publish it as fiction? There were, according to your own statement, a group of disinterested and reliable witnesses who could vouch for the fact that Cannes told the story, and who also, you said, witnessed the 'coincidence'."

Just then my phone rang. To my astonishment, Crandell Sherman, the man who had started the argument with Preston in the first place, was at the other end of the wire. He was evidently pressed for time, but he invited me pleasantly to meet him at the club that evening. He stated that he wanted to gather together again all those who had heard Cannes' story, as he had some light to throw upon it. I went that evening for the second time to that club, and I took Bill Simons with me.

We were the first to arrive. Shortly afterward came Ralph White and John Stevenson, as solemn and intellectual a pair of young men as I ever hope to see. I asked White to confirm my statement to Simons that my story had been correct, exact, and true. White did, with reservations.

"The story was correct, in the main," he said pedantically, "although Mr. Cloukey did embellish it a little; not unduly, however. But he used a badly mixed metaphor which really cannot be blamed on Cannes, because Cannes didn't try to use any figurative language, in spite of what the written version is. On the whole, however, it followed Cannes' narrative rather closely."

I'd have liked to have thrown a dictionary at White by the time he finished his politely impolite pronouncement, but I had no dictionary anywhere near, and such an action would have appeared unseemly in the club. At least I had confirmation of a sort.

Crandell Sherman and the others came in from the next room. After various greetings and introductions, Sherman was ready to start his talk. I noticed that everyone who had been present at Cannes' telling of his story was present now, with the noticeable exception of 'Gene Preston, who had violently disagreed with Sherman and who maintained that Cannes' story was nothing but fiction, and that traveling through time was the most absurd of all scientific absurdities. I ventured a comment on his absence.

"He will not be here," said Sherman, and started at once on the story which is the sequel to "Paradox."

Crandell Sherman's Story

"I HAVE always believed," he said, "that Cannes was telling the exact truth to us that night. I think we all were ready to believe it after that accident, even Preston, although he would never have admitted it.

"I was particularly impressed by what Cannes told us about Endicott Hawkinson, for although Cannes was obviously ignorant of the fact, Hawkinson was also a close acquaintance of mine. In fact, he married my younger sister. A day or so before we heard Cannes' story I had been talking with her. She told me that she had not disturbed anything in her husband's laboratory since the fatal fire, as she thought that many of his scientific devices had not been seriously injured, and she intended to have them appraised. She had been out of town when the fire occurred.

"The day after Cannes' death I went over to Hawkinson's lab. His widow, my sister, let me in. On the burnt remains of a heavy table were the charred remains of the pale blue manuscript, that product of a far-distant century. I identified it beyond the shadow of a doubt, though it was only a heap of burnt paper. Some little pieces hadn't completely burnt. They were a pale blue. Two of them had fragments of mathematical equations on them.

"Remembering how I had been ridiculed the day before by Preston, I phoned for him to join me. He did, although he thought I was joking. That is, he would have thought I was joking if he himself hadn't seen what happened to Cannes. By the time he arrived I had determined to my own satisfaction that Hawkinson's time machine hadn't been seriously or permanently injured. The heavy hollow metallic cube, supported a foot off the floor by four large vitreous insulators, precisely as it was described to us by Cannes, had not been materially affected by the flames. The eight heavy cables leading to its eight corners were still intact. The cube was five feet six inches in each of its exterior dimensions, and five feet three on each edge of the interior. There was a close fitting trap-door in the top of it, and the remains of a wooden step-ladder were nearby. The heavy cabinet with the bakelite panel, from which emerged the eight cables leading to the cube, was intact and hardly discolored by the flames.

"The fire in the laboratory had been not at all severe in the place where the time-machine stood, though the damage in other parts of the building had been very great. This was an enormous piece of good luck.

"Preston arrived and was astounded and then convinced. He became exceedingly excited, and his enthusi-

asm was contagious. To be brief, we spent several hours in arguing with the electric company and finally got them to reconnect Hawkinson's private power line, first sending electricians out to the lab. to repair the faulty insulation that had caused the fire. After all precautions against a repetition of the short-circuit with the regular house-lighting circuit had been taken, that machine of Hawkinson's for producing and employing the NN-4 wave, the fourth-dimensional or time-wave that we learned about from Cannes, was again ready for use.

"We set the latitude and longitude dials to indicate the location of Sydney, Australia; and after much discussion and argumentation we set the time dials to indicate September 28, 2930. This was the day upon which Dwar Bonn, Greta Bonn, and Raymond Cannes had left for New York on the gigantic liner of the air, *Patrician*.

"I don't know exactly why we chose that particular date, but our reasons seemed very logical to us at the time we did the choosing. We were both a little crazy with the excitement of what we had discovered.

"We took a certain friend of mine who could be trusted to keep our secret into our confidence, and showed him what we proposed. He agreed to help us and to keep his knowledge of our disappearance to himself, although he was dubious about the possibility of our intention and about the advisability of helping us. We gave him a signed statement absolutely absolving him from any responsibility in case our disappearance should be traced to him. When he had thus been protected, he aided us by throwing certain switches on the panel of the cabinet, after Preston and I had climbed inside the hollow metal cube. And so, although we were ignorant of the principles and the construction of the machine, we were taken out of the world in 1928 and put back in in 2930. But it seemed like ten seconds to us.

"The sensation was one of rising with terrific acceleration through perfectly black space. There was extreme cold, and, I think, a complete lack of atmosphere. We gasped for breath and would have been suffocated if the journey had lasted a few seconds longer. In the three-dimensional world it would have taken us more than a thousand years to reach our destination, but through the fourth dimension it took us seconds, not centuries. Time is relative, you know.

"When I was almost unconscious from cold and lack of air, I heard distinctly three clicks. The motion stopped with a jerk that hurt, and light dazzled my eyes. It was artificial light from a globe above me. I perceived that I was standing in a deserted street between two buildings whose sheer height startled and impressed me. Offhand I estimated that they were at least five times the height of the Woolworth Tower.

"Someone startled me by touching me on the shoulder. I wheeled and saw Preston, whom I had entirely forgotten for a moment. He smiled at me doubtfully.

" 'Cannes' story was truth,' he said solemnly. 'But, Sherman, it has just occurred to me that you and I are the biggest pair of quintuply damned fools that ever existed.'

"And we plunged forward into strange adventure.

"WHEN we had proceeded about a quarter of a mile, we came to an intersection and noticed that for some reason the particular section of the street we were traversing had been blocked off from traffic, which was thick on the other three arms of the intersection. There was no noise, no confusion, no dirt and smoke. The vehicles, of all sizes and shapes, moved rapidly, silently and smoothly. There was no one near us on the extremely narrow sidewalk. We watched the traffic, interestedly, for ten or fifteen minutes, then witnessed an accident that turned out to be very fortunate for us.

"Due to some fault in material or workmanship, a wheel came off of one of the speeding stream lined cars. The driver, with presence of mind, swerved his machine out of the rapid line of traffic, and the heavy enclosed car lurched to a stop a little way up the street that had been blocked off. Preston and I pursued the wheel and caught it. It was fitted with a heavy pneumatic tire, made, I learned later, from cheap synthetic rubber. We rolled the wheel back to its owner, who had already jacked up with a little compressed air device his glittering, peculiarly shaped vehicle. He put the wheel on with the aid of a kit of little tools, some of which were also operated by compressed air. Then, hospitably, he said that he noticed we were strangers, and offered to take us wherever we wanted to go. He smiled when we mentioned Dwar Bonn's laboratories.

" 'I work there,' he said.

"As Cannes had been, I was amazed at the comparatively small changes that had taken place in the English language in such a long period of years. You remember how Cannes explained that circumstance, so I won't go into that. Our friend introduced himself as Jac Vanon, an assistant chemist in Bonn's great establishment, but told us that 'this was his night off,' but that he would be glad to take us there. For the first time I realized that it was late in the day. I remembered noticing the artificial light. Then I saw that it was really late in the evening, though the great globes, suspended above the streets on slender cables, gave a natural, pleasant light.

"A few minutes later, with Preston and Jac Vanon at my side, I was standing in the presence of Dwar Bonn's confidential secretary. I asked to be permitted to see him, as I had important news for him. (And I had such news, for, if I could have seen him then, I could have told him in advance about the Martian plans, as I learned them from Cannes after he had returned to 1928 through the fourth dimension.) I was half expecting the answer I got, for I was just then realizing that we had picked a rather poor moment to appear in the thirtieth century.

" 'Dwar Bonn,' said the secretary coldly, 'has recently left for New York on the air liner *Patrician*, taking with him his daughter and Ray Cannes, a guest, but leaving specific instructions that he was not to be bothered by any messages or communications. Members of his staff will attend to your "important news." You will please dictate it to the dictophonoprinter in the next room, and it will be attended to in due time, probably in about three weeks, as there are many things that precede it. Good evening.'

"Before I could say a word the high-hat secretary had disappeared through a door.

"Jac was angry. 'Listen, fellows,' he said, 'you'll never get any action that way. That secretary is a conceited imbecile, who wouldn't lift a hand to help anyone. I've got nothing to do tonight, so if you want me to, I'll get my plane and we'll fly out to catch the *Patrician*. She left the Sydney terminus only an hour ago. I can catch

her in another hour. We'll land on top, using suction-pad landing gear, because the captain of a big monotriplane like the *Patrician* wouldn't stop for any reason to let anyone on. But we can stick to him by suction, and talk through the walls with a dick and a mike.* You fellows say you have an important message, and if for no other reason, I'm going to show that ——— secretary that he can't sidetrack Jac Vanon.'

"He was full of enthusiasm for his idea. I guessed, correctly too I found out, that there was an old grudge between Vanon and this particular secretary. He hustled us back into his car, took us to a skyscraper garage where he parked the big electric roadster and ascended with us to the roof in one of those amazing elevators, whose occupants feel neither the meteoric ascent nor the equally rapid descent. He got out his plane from the hangar on the roof, and we took off after he had fitted us out with two extra pairs of life-disks and had donned his own. Their use is required by law. Little metal rods support the disks an inch above the shoulders. I could hardly believe that in case of accident they would act as parachutes to save us.

"As we took off from the roof-drome I became aware of a thrill of liking for the impulsive Jac Vanon, and I think Preston did too. In a minute we were away from the lights of Sydney, shooting along in the smooth silent plane at a speed of almost 2300 kilometers an hour, more than twenty miles a minute. The marvelous science of that far advanced age made such speeds possible without the slightest discomfort. Inside the plane we felt no vibration and were not affected in the slightest degree by the acceleration and deceleration of the skyboat. When we made turns centrifugal force was not even noticeable. As Cannes has observed, only by the eyes can one tell that he is moving.

"Jac Vanon told us that he would hardly be able to fulfill his promise of catching the *Patrician* in another hour, as he had figured out that more time would be necessary. Then he asked if we could relieve his curiosity and tell him why it was so imperative that we reach Dwar Bonn. So we told him the whole story. He was tremendously impressed. His mood changed to seriousness. He was a man of the thirtieth century and he understood very well how, by traveling through the time-dimension, it was possible to know future events before they occurred.

" 'So the *Patrician* is doomed,' he mused. 'Doomed by Martian brarron. And the whole world—but you say they will be warned by radio from the *Patrician* fifteen minutes in advance of the explosion. That is fortunate, for many will be able to escape from the crowded centers of population, where the explosive is likely to be stored. If this plane had a radio, I would warn the world even earlier. But we have none. We'll try to approach as near as is safe to the *Patrician* before the explosion takes place. Maybe we can save some of the unfortunate ones who would be hit by fragments of the wreckage while they are falling with their disks and trying to escape. Fragments of the wreckage will get a lot of them.

" 'Perhaps even now that invisible Martian is killing Dwar Bonn,' said our companion bitterly, and then was silent.

"That started me thinking. Perhaps even now as we pursued it, the men on the *Patrician* were learning from the captured Martian's unwilling lips about their danger and the danger of the world. Perhaps—perhaps he hadn't yet been captured by Cannes. Perhaps Cannes was on the upper deck under the transparent roof near the great ventilator with Greta Bonn in his arms, stealing that one kiss she had so hated him for. Perhaps—I looked out through the side window of Jac Vanon's fast plane. The full moon was vivid orange.

"Jac Vanon swore under his breath.

" 'Greta Bonn is on that plane,' he said. 'I hope she survives, or life will be empty for me. Sherman, I admire your friend Cannes and I'm sorry for him, but Greta is my girl, not his.'

"I said nothing. Gene Preston whistled.

"Far ahead of us we could detect the gleam of lights. In a very few seconds we came near the *Patrician*, ninety-thousand ton liner of the monotriplane type, three great wings, one behind another, and the third behind and slightly lower than the second, supporting the great lighted fuselage. It was a city in the air and it was being deserted. Thousands of people were jumping off and falling with their life-disks. The great plane was motionless, supported by ten helicopter propellers of colossal proportions.

"We knew from Cannes' story that the explosion would take place in a very few minutes. I experienced a thrill of wonder as I realized that Cannes was on that plane. Yet I had seen him killed by a truck a thousand years previously. The paradox set my head whirling.

"The last great wave of people was descending from the motionless plane, when Jac's flashed by rather close to one side. When we were a safe distance away Jac slowed and stopped, turning his little aircar around so we could watch. I could see the muscles taut in the throat of our friend of the future. Preston whistled again.

"We saw one lone figure fall away from the *Patrician* after all the rest. I thought that it could only be Greta Bonn. Cannes had refused her offer to give him her life disks in place of his, that she had destroyed. Cannes was now alone on that great liner and he had no disks with which to save himself.

"At the Martian station at the South Pole, preparations were being made to broadcast over the entire world the radio wave that would detonate the brarron in the cargo-rooms of the *Patrician* and elsewhere all over the earth wherever the spies of Mars had placed it. In ships and airplanes, in factories and great office buildings, in cities and in great agricultural regions, the mysterious brarron, the extraordinary Martian explosive, was hidden.

"But the radio staff of the *Patrician* had warned the world in advance. All great cities were being deserted silently. Most of the other great planes were being abandoned. Fortunately, no Martian spy was able to get word to the commanders at the South Pole about the disclosure of their plans for surprise, and the detonation did not take place until the scheduled moment. If it had been exploded five minutes earlier, the brarron would have done twice as much damage as it did.

"Cannes has told you how he escaped through the fourth dimension, returning to 1928 to be hit by a truck. Irony? Destiny? I don't know.

"A tremendous yellow flash blinded us. Seven seconds later the sound and the concussion reached us. As the wrecked remains of the skyliner fell, Jac's little plane hurtled toward it.

* Detector and microphone.

"It was only the front end of the plane that had been destroyed. The rear half fell toward the ground in one piece. As it fell I saw Vanon staring at it with puzzled and expectant eyes. Nothing happened. Our plane slipped to the left, avoiding the great mass that was falling intact.

"Jac put our comet into a steep dive and soon zipped past a slender figure, falling slowly. By the most daring manipulation I have ever seen, our pilot put us below and very slightly to the side of the one who fell, locked his helicopter control to keep the plane motionless, opened the door, reached out to seize the girl as the disks let her down. I had a hunch that she was none other than Greta Bonn, and exclamations from Jac soon confirmed the fact. I remembered from Cannes' story, that she had been the last to leave, and she had been the first we had seen on our downward dive. So Greta Bonn was rescued.

"Some piece of the wreckage had hit her. She was unconscious and bleeding from a thin, clean, six-inch cut in her forehead. Oblivious of Preston and me, Jac tried to kiss her back to consciousness. This peculiar method of procedure met with remarkable success. She stirred.

"'Raymond,' she whispered. 'I'm sorry, Ray Cannes —I——'

"Jac winced and turned away his head.

"He took off his outer blue-gray coat, revealing a garment like a shirt without any neckband or collar. It was white, made of fine material. He tore it into strips and bandaged the cut in her forehead, putting on again the outer coat.

"'Preston,' he said, 'do you think you could run this boat?'

"'I've been watching you,' was the reply. 'I could make a stab at it, at least.'

"'I can direct him,' said Greta weakly, leaning back wearily against one of the heavy artificial leather cushions.

"'Fine. Preston will take you back to Sydney, if there is anything of Sydney left. Er—follow her directions, Preston. Thanks.'

"Jac hooked his arm in mine and jumped out the door of the motionless plane, dragging me with him. For a second cold fear held my heart, but the disks let us down slowly and I soon gained confidence. Jac was with me. Far below were many twinkling lights. Vanon spoke.

"'In your time there would have been nothing below us but the Pacific Ocean, but in the last centuries much artificial land has been created. Below us is a great wheat region. I doubt if there are any men except those who jumped from the plane within a hundred miles or more. Men are no longer necessary for the cultivation of wheat. Robots do that.'

"'Why did you leave the girl?' I could not help but ask, as his conduct seemed certainly unloverlike.

"'I'm taking a chance,' he replied. 'I've got a suspicion that may possibly turn out very well for us in our war with Mars. Considering that, I left Greta there. Your friend has mechanical ability—the fact is self-evident. The control system of that plane is very simple, so I do not expect any difficulty or trouble. She's lost a lot of blood, so it's important that she be attended to soon by a competent physician. A little modern healing, and there won't be a scar left.'

"'What do you plan to do now?'

"'Investigate. There were two cargo-rooms on the *Patrician*, one in each end of the fuselage. The passenger quarters were between. It seems unusual that all of the brarron should happen to have been in the smaller of the two cargo-rooms. I don't think the Martians meant it that way. I think they would have planted some of it in each cargo-room, for it would have been much more effective. If they did, perhaps there is some unexploded brarron in the rear cargo-room. If we could capture some of it, we could soon find that elusive wave that detonates it. We could analyze it and reproduce it. When we find the wave you can understand that all the brarron now in the Martians' possession becomes not only dangerous to us, but to them.'

"'But if there is some unexploded brarron there, *why* wasn't it exploded when the note was sounded?' I objected. 'Why was it not sensitive to the broadcasted wave?'

"'I don't know,' said Jac. 'There probably isn't any brarron there. I am just taking a long shot in the dark. But it just doesn't seem altogether right that it should be so illogically distributed. It did its work however.'

"The disks had by this time let us down almost to the ground. Close by was the great hulk of the once glorious *Patrician*, plainly revealed by the orange moon. Many men were gathering about it. A large number of them had electric lights, operated either by batteries or by the power that was always being broadcast. So far, no brarron had seriously affected the radio-power plants. They were important units in the world's organization, but they had been so well guarded that the Martian spies, working under cover, had been able to locate no brarron near enough to them to do any damage, with the exception of two substations in New York, as we learned later."

Crandell Sherman interrupted his narrative at this point to answer a telephone call. When he returned, he took up the story and told us of Jac's search through the wreck for the explosive, which was found in large quantities, due to his playing the hunch he had, when he saw the airship fall. Sherman told us how he had used the radio one of the survivors possessed and had radioed to some of the staff of Dwar Bonn in Sydney. Most of the scientists at Bonn's laboratories had escaped in the nick of time the explosion that wrecked the great buildings, as brarron had been cleverly concealed in the foundations of the buildings by some of the Martian spies, who were all over the world, disguised, for they were Martian brains that had been transplanted into the bodies of unfortunate humans who had fallen into Martian hands. The Martians used human bodies, as was explained more fully in Cannes' story, because the fragile Martian bodies could not exist long on earth because of the superior gravity. The Martians had learned this in the two previous Martio-Tellurian wars, which had taken place in the centuries previous.

As Sherman has given me express permission to alter his story in any way I desire, I am going to omit large portions of his narrative, telling at this point of facts that Sherman did not disclose at the club until the end of his story, facts that Sherman himself did not know at the time when he and Jac Vanon found the brarron in the rear cargo-room.

As I understand the situation, the door from which the two emerged to descend with the disks was almost

directly below the wing of Jac Vanon's monoplane. As they sank out of sight in semidarkness, a slight figure who had been lying flat on the wing, swung down by a handhold and entered through the door, a tiny odd-looking pistol in one hand pointing at the astounded Gene Preston, who was just unlocking the controls, under the direction of Greta Bonn.

The girl turned toward the intruder who struck her heavily with his left hand, which was encased in a metallic flexible glove. She sank back unconscious against the leather cushions. Preston made a motion toward her, but was checked by a threatening move of the weapon in the intruder's other mailed hand. Preston looked at the face of his captor.

The eyes were a deep red-flecked purple, with no pupils.

When the Martians transplanted Martian brains into human bodies, it was found necessary to transplant Martian eyes also, as the eyes were the only organs of the body that did not function equally as well for the Martian brain. The eyes were the one give-away to the Martian spies, who had managed remarkably well to keep them concealed with colored glasses, and had probably been able to kill all human beings who had discovered their secret.

How the Martian happened to be on top of the wing I do not know. Sherman was not a witness of the situation, and his account at the club was nebulous, for his own knowledge is not very clear on this point. The Martian could not have been on the wing on the trip out from Sydney, for the speed, acceleration, centrifugal force, etc., at twenty miles and more a minute would have killed anyone, and the air-pressure, caused by the terrific speed would have blown him off the wing. He must have been on the *Patrician*, escaping the explosion even later than Greta Bonn, landing on top of the wing with his set of disks after Jac had rescued her by his daredevil manipulation of the little plane. Perhaps he was the same spy whom Cannes had captured aboard the *Patrician*. Cannes never knew what finally happened to that Martian. Perhaps the spy had been able to escape from the officers in whose custody he had been placed. Perhaps he overpowered one of them and took his set of disks. We do not know, but we can conjecture.

At any rate he had overheard enough to inform him that the girl was Greta Bonn, daughter of the great earth-scientist. Due to Jac's fortunate abruptness, he had not overheard the reason why Jac and Sherman had jumped off. The Martian, thinking that the girl probably had information about her dead father's scientific secrets, that would be useful to those at the South Pole, forced Preston to head the plane south at its maximum speed. Inside the plane, as has been stated, such speeds could be endured.

The plane could be electrically heated, and it rapidly penetrated the Antarctic regions, speeding at an incredible rate toward the headquarters of the Martians on earth. And high in the sky above the South Pole was a light that ever came nearer. Gradually a low moan made itself audible and ran up the scale, until it passed beyond audibility, as an ear-splitting screech. With terrible momentum the second Martian space flyer plunged into the soft snow. It was hot from its passage through the atmosphere, and the snow was vaporized at once, great bursts and jets of steam appearing.

The first flyer had brought only spies to lay the foundation for the war, which now was to begin in real earnest. "In three days," the spy had told Ray Cannes, "not a terrestrial will exist."

But Sherman knew nothing of this as he waited in the outer office of one of Bonn's laboratories at Sydney, the only one that still existed. It was the chemistry and physics lab. The destruction and death in Sydney had been terrible, but the scientists who had escaped, warned in advance by the message from the *Patrician*, had returned to the one building that had escaped any serious damage. Receiving Jac Vanon's message that he had obtained some unexploded brarron, they had sent a plane out after it, which had come back with it and Jac and Sherman. Immediately the great staff started the task of analysis. It was morning when Jac came out of the chemistry room and told Sherman that they had been successful.

I now resume direct quotation from Crandell Sherman.

Crandell Sherman Continues His Story

"JAC seemed greatly excited as he told me that the analysis had been successful.

"'What,' I asked, 'is the stuff?'

"'It is a compound similar to nitroglycerine, but it contains no nitrogen, as was erroneously believed until now. Instead of nitroglycerine, which is glyceryl nitrate, it is glyceryl neonate, or neonoglycerine.'

"'Neonate? A compound of neon? I thought neon was an inert element.'

"'It was, until a couple of centuries ago. Chemistry has advanced a lot since your time. While nitroglycerine has the formula $C_3H_5(NO_3)_3$, brarron is $C_3H_5(NeO_4)_3$. When it is detonated by that wave it is sensitive to, it decomposes instantly into gaseous products. You notice it contains more oxygen than nitroglycerine. It can also be set off by heat or by a violent shock, but it is not as sensitive to these as an ordinary nitro compound. Its exclusive property is its sensitiveness to that wave, which by the way, we have not yet found. The men in the physics lab. have a cubic millimeter of the stuff and they haven't exploded it yet,' Jac concluded mournfully.

"I was astonished by this information. I had thought that neon was absolutely inert, that it entered into no chemical combination, had no valence. But these chemists of the thirtieth century did not seem at all amazed because this rare gas was in chemical combination in brarron, the explosive of Mars. Since I have returned to the present time, I have spoken with one of Philadelphia's best chemists. He informed me that neon was a rare gas occurring in the atmosphere, that it never entered into any chemical combination, and that it had formerly been useless, though recently it has been employed to great advantage in television transmitters, neon advertising signs, and so forth. When I suggested that in the far future it might be used to make powerful explosives, sensitive to certain waves, the chemist laughed at me——

"'Now that you have the formula,' I asked Jac, 'what are you going to do with it? Manufacture the stuff?'

"'We could, but I don't know whether or not we will. We could easily make all the neon we would want by transmutation, which would save the trouble of extracting it from the air.' (This was another astounding

piece of information.) 'But,' he continued, 'the fixation of neon; that is, the process by which we cause it to actually combine with other elements to form the neonic acid, which would be necessary in the manufacture of neonoglycerine, is an extremely delicate operation, requiring complicated apparatus, much time, extreme conditions of temperature and pressure, unusual catalysts, and a great amount of technical skill and ability. Terrestrial chemistry is still behind the Martian brand. They apparently can do it easily, and in quantity. On the earth, since other acids are much cheaper and more practical for every purpose, very little neonic acid or other neon compounds are in existence, although there are some supplies, principally in the laboratories of a certain Egyptian scientist.'

"'By any chance the one who has perfected a process for causing total invisibility?' I asked, having in mind Raymond Cannes' story.

"'Yes,' he said parenthetically. 'But the important thing to us now is not the formation of brarron, but the means of detonating it, Sherman. The gang in the physics lab. are trying all wavelengths and combinations of wavelengths, but the dope is consistently unresponsive. By the way, we think we've found the reason why it didn't explode on the plane a few hours ago. You probably didn't notice that nearly all the contents of that cargo-room, except the brarron, consisted of a new shipment of uranium-radium ores and other radioactive materials, some synthetic. Because of this, the entire cargo-room was lined with lead. The other cargo-room contained no such materials, and was not lined.'

"'Indicating that the wave we want to find does not pass through lead.'

"'Yes. We might as well get a little sleep. It's day already. If my apartment is still in existence—— But first I'm going to make inquiries and see if Greta's all right. Your friend is probably lost in this new world, too.'

"Two hours more passed before I slept, two nervous hours we spent in broadcasting inquiries to all authorities, and to everyone, asking for information about Greta Bonn. No hospital or surgeon anywhere had treated her, yet when we had left them, their specific objective had been to get medical treatment. When their disappearance was absolutely established, Jac put me to sleep with his hypnotic device, and took some needed rest himself. Without mechanical or synthetic hypnotism, I doubt if either of us could have slept, so great was our excitement and suspense. Meanwhile authorities all over the world were searching for Greta Bonn and Gene Preston.

"But the world had other things to attend to, also. Due to the timely warning, only about thirty per cent of the world's population had been wiped out by the explosion of the brarron that had been concealed in all important cities. Greta Bonn was not the only important person missing.

"Late in the same morning Jac and I were awakened, also by hypnotism. We listened, with many others assembled in Bonn's laboratory, to the words of Ben Yun, the able Japanese lieutenant of Dwar Bonn, who had assumed command at the death of the latter.

"'Seismographic department reports,' indited Yun, 'concussion indicating arrival of Martian spaceboat within seven miles of South Pole, while astronomic department reports two others on way here from Mars. Chemistry men report analysis of brarron obtained from *Patrician,* and are making preparation for manufacture of same, if necessary. Physics men report discovery of combination of waves necessary to detonate same. Authorities in charge report no trace of Greta Bonn, hinting possible capture by Martian spy.

"'I therefore order that beam projector of necessary strength be at once used to direct suitable radio waves of sufficient power on Martian vehicle now at South Pole, which same probably contains new supply of dreaded explosive. As war has now lasted for thirteen hours, possibility exists that Martians are yet in ignorance of terrestrial capture of, and experiments with, brarron. Executive department, using suitable code, mathematically impossible to be deciphered by unofficial persons, will communicate our discoveries and plans to all of world, particularly to War Council of Nations formed this morning and holding secret session in District 3000856 of Florida, as ascertained by our Department of News. Because of extreme danger to entire civilization of world, necessity arises of taking regrettable chance that daughter of Dwar Bonn may be at Martian Polar Headquarters when we explode brarron at that locality.'

"The group separated to carry out instructions. Yun stopped a moment to console Jac, who was fearful for the safety of the girl. I was very much pleased to find that the human emotions had a place beneath the Japanese's unchanging exterior, and I was attracted by his English, which was perfect except for the omission of any and all definite or indefinite articles.

"For the next three hours I made myself useful by helping Jac operate one of the great decoding robots that interpreted the messages that came from all parts of the world through the ether, in codes so subtle and intricate, whose secrets had been so well guarded, that there were very few chances out of a million that the Martians could decode them. They told of the mobilization of the land, air, and sea offensive forces, and of the preparation of the great defensive works of every nation. Swarms of little planes, unbelievably swift, were escorting great battleairships of a hundred thousand tons and more, to the south; and these planes carried the most deadly terrestrial explosive bombs and destructive gases. The world began to be confident of success when seventeen hours had passed and the Martians made no further offensive move.

"In the meanwhile Dwar Bonn's men, under the leadership of Yun, were preparing the great beam projector. Two more hours passed, and it was ready. Adjustments were made and a switch was thrown.

"Just then news came through my robot that all the earth's forces had been annihilated when they reached the latitude of 86° South.

"Ben Yun smiled, almost. He listened to a pocket receiver. 'Their victory was short-lived,' he said. 'Seismographic department report terrific detonation seven miles from South Pole.'"

* * * * * * *

ASKING the reader's indulgence, I am again going to depart from the thread of Sherman's narrative, to try to reconstruct, from very limited information, scenes which Sherman did not witness. Of course it is understood that there is much that can only be conjecture.

In a building at the South Pole, very small and with very thick walls, sat the Martian Offense Commander, receiving a report from one of his subordinates. If rendered into English, the conversation was probably something like this:

"The air forces of the earth have been shot down?"

"Completely, Commander. The automatic antiaircraft guns with those sensitive double systems of photo-electric and gravitational range-finders to act as mutual checks on each other have functioned perfectly. Every shot was effective. Few terrestrials were killed, however, as the enormous majority of the planes were radio-controlled, carrying explosives and gases, the latter spreading out in great clouds threatening to envelop the entire polar regions, were it not for our operatives, in planes, neutralizing the gases with suitable chemical products."

"Our comrades in the other space ship?"

"Were completely destroyed, as was the staff of surgeons who left here with a supply of bodies of captured earthmen. The surgeons were starting the transferring of Martian brains to suitable bodies when the explosion occurred. Either it was due to the carelessness of some one of our scientists, or else the powers of the earth have in some manner penetrated its secret. In either case, the situation is serious. We have lost a great advantage."

"You have prepared germ-culture number R-37$_a$?"

"Yes."

"We can afford to waste no more time," said the Commander. "Tonight all of our operatives will fly north at the highest altitudes practicable. I do not possess exact data, but in this thick, rich atmosphere, far greater heights will be possible than on our red planet. They will carry with them the entire available supply of these bacteria, and will release them into the atmosphere at strategic points. They are deadly and hard to kill. Our scientists worked seven years to develop them. It shows what selective breeding will do. We shall catch the earth-scientists unprepared. They have nothing to cure the hideous disease our little germs will spread. They multiply astonishingly; under favorable conditions a number of those bacteria will double itself in five minutes!"

"Your orders shall be carried out." The subordinate left to attend to germ-culture R-37$_a$, while the Commander occupied himself by studying minutely a map his scientists had prepared of the prevailing air-currents of the earth.

A short, slight figure entered the room, carrying, almost with difficulty, a slender thirtieth century girl, cold with death. A white bandage was across the high forehead. The figure laid the girl's body on a long table at one side of the room and turned to his superior, reporting the results he had obtained.

"Egyptian scientist killed. His device for producing invisibility was captured, but was later destroyed by a terrestrial, who captured me on the *Patrician* while I was attempting to take the new invention of Dwar Bonn, whom I killed.

"I was captured and hypnotically forced to disclose all I knew of our plans. World was warned in advance. Many who otherwise would have been killed escaped from various centers of population in aircraft. I escaped from my captors, stole life-disks, dropped off *Patrician* shortly before explosion. Narrowly escaped death from fragments. Captured small monoplane and two persons, one of them this girl, daughter of Dwar Bonn. Forced the man to drive plane south, landing near the newly arrived ship from Mars. The female commander of that ship wanted the beautiful body of this girl, instead of the body provided for her by the surgeons. The man, accompanying the girl, made a foolish attempt to protect her and was killed, while she fled toward the monoplane. I pursued her. Then the entire space ship was destroyed by the explosion of the new supply of brarron it brought. Again I escaped the fragments of wreckage and came here. The girl died from loss of blood from previously acquired wound on forehead, coupled with exhaustion and cold, which she is not dressed to withstand. I await further orders."

Two persons broke into the room. One held in each hand a heavy pistol, covering the two Martians. The second carried a small hypnotic device. A third entered, bringing with him the unconscious form of the Martian, who had been dismissed with orders concerning "germ-culture R-37$_a$."

The three were Jac Vanon, Crandell Sherman, and Ben Yun, the Japanese scientist.

A BRIEF explanation is necessary. Sherman, upon detailed questioning by Ben Yun, had disclosed that on the *Patrician*, Raymond Cannes had captured a Martian spy and had succeeded in damaging the wired membrane that had covered the spy, and which caused light to flow around him in every direction, as water flows around a fish, thereby producing invisibility. Because of the non-explosion of the brarron in the *Patrician's* rear cargo-room, it was thought possible that the damaged membrane, production of the great Egyptian scientist, might be still on the plane. Upon immediate investigation, it was found. Working at fever heat, scientists under Yun's supervision repaired the device.

Then a daring plan to take the offensive had been conceived, and a tiny rocket-plane had been rendered invisible. It could carry only four people. A courageous pilot, skilled in the operation of rocket-ships, had been obtained, and with him went Yun, as commander. He took Jac along because of the possibility of finding Greta Bonn; for hours the thirtieth century boy had been attending to his duty instead of searching for the girl he loved, and the suspense was telling on him. Sherman did not make very clear the reason *he* was taken along. Three minutes after the invisible rocketship took off it landed at the South Pole.

So it was that they broke in upon the commander of the Martians. Again I let Sherman take up the direct narrative. At the time of which he now speaks, he knew nothing of the events that took place in the building at the pole before he broke in with the others.

Crandell Sherman Continues His Story

"WHILE I was covering the two Martians, Jac saw the girl's body on the table. With a gasp he let fall the delicate hypnotic apparatus in his hands and rushed to her side. The hypnotic device crashed on the floor. Ben Yun dropped the Maritan he had brought in from the outer room, which Martian was being carried quite easily in the herculean arms of the big Japanese, and picked up the thing that Jac had dropped.

"'Device is broken,' said Ben Yun.

"'She's dead,' said Jac Vanon in a whisper, and I heard the first sob since I had come into the future. I knew he blamed himself for leaving her, even though by so doing he had made the important discovery of the unexploded brarron. A wave of sorrow passed over me at the realization that she was dead. I knew instinctively, too, that I was never again to see Preston.

"There was a hard glitter in Ben Yun's eyes as he spoke to me. 'Destruction of hypnotic machine destroys also our advantage. Impossible now to control minds of these Martians,' he said, and turned toward the two with the inhuman purple eyes. The third was still unconscious at his feet.

"'Does Commander possess knowledge of English language?' Ben Yun asked quietly.

"'Yes,' was the reply.

"'Very well. If Commander wishes to live, he will at once disclose to us hiding place of large quantity of drug known as adrenalin, which is undoubtedly kept at this headquarters for purpose of reviving human bodies after Martian brains have been transferred to same. Earth authorities have all reported suddenly noticed absence of adrenalin from customary places of supply. Spies of your planet have been expert in obtaining nearly all of said drug existing in world. We now desire to retake such valuable substance. Commander will be prompt in disclosing present location of adrenalin.'

"Jac Vanon rose to his full height, his face transfigured with realization and hope. The maximum dose of pure adrenalin—injected directly by one as skilful as Ben Yun into that cold, still heart—there was still the margin of a fighting chance for Greta Bonn—life!

"A tantalizing slow smile flickered on the lips of the Martian Commander. There was almost a twinkle in those red-flecked pupilless eyes of purple. Somehow they revealed to me the soul of a gambler. Many of the great generals of history have been gamblers, ready to stake everything on a chance.

"'I could lie to you,' said the Martian, 'but I won't. I could tell you that all our adrenalin had been destroyed when that space-ship met with disaster, a few hours ago. As a matter of fact, only some of it was destroyed then. There is an ample supply on hand in this building, but it is where you could not possibly obtain it, in time, without my help. The situation is delicate. The fate of two planets will probably be decided right here in the next few minutes. There is such a thing as honor the universe over. If I should disclose to you the location of this adrenalin, what terms would you offer me?'

"'I do not command forces of earth,' replied Yun. 'But I hold influential position and command large body of men skilled in every science. My word of honor is inviolable. I have great desire to give life to beautiful girl, daughter of my friend, now reposing in state of lifelessness on table. You permit me to accomplish this; we leave in our rocket immediately for continent of Australia; leaving you alive and unharmed, damaging in no way radio station and other great works at this headquarters. After that we resume war. I make proposition for sake of girl and boy loved by her, because I am sentimental man. Any other person on earth, even though it cost life of girl, would seize chance to kill and destroy, gaining great advantage for earth. You make a decision?'

"'You are confident, are you not?—that you will be able to defeat us Martians anyhow, in spite of a few odd dozens of centuries advantage we possess in civilization and science. You are willing to forego your present advantage because you think you can defeat us in any case?'

"'You say truth. We have done so twice previously in spite of great advantage of extra centuries. We fight on native planet. You invade across vast void of space.'

"'Your proposition is hardly satisfactory. If I refuse to do as you wish?'

"'I cause you to be killed efficiently and immediately. Then, incidentally destroying all things here too big to carry off but likely to be of benefit to other Martians arriving here, I conduct rapid scientific search for desired adrenalin.'

"'Satisfactory. Shoot. You realize that I am only a very small part of the Martian machine. Life or death is nothing to me personally, or to any high-bred Martian. We are all working toward one objective, and lots of us will not live to see it succeed. You do not know, Earthman, that your rocketairplane was able to come here only by chance. I thought that all available air forces had been shot down, and I ordered that our antiaircraft barrier of guns be halted and inspected for adjustment, as the sensitive and delicate photoelectric and gravitational rangefinders that enabled our automatic guns to shoot down every one of your war planes in spite of their great and varied speeds, are often out of adjustment after a few hours of constant action. You came through them and escaped destruction, perhaps even detection, because of that invisibility. But the adjustment has all been finished by now. As you try to get out of the circle again, the photoelectric finders won't catch you, but the gravitational finders will. Also, in about twenty minutes of your time, several of my subordinates will arrive here to report to me. It is not scientifically probable that you will be able to cope with them at all. They carry hypnotic instruments. We Martians can use them too! That foolish boy weeping on the breast of the girl has been your undoing, for had he not dropped that device, you could have forced us to do anything in the world—or out of it! Now you cannot force us, you can only shoot us.'

"The face of Ben Yun was an impenetrable mask.

"'Perhaps I reconsider,' he said. Then——

"'Yes. I reconsider. I perceive that if I shoot you, I and my friends are caught in hopeless death-trap. You have astronomical telescope in adjoining room?'

"'We have,' said the Martian. 'It is being kept trained upon the first of the two additional space-ships on the way from Mars to here.'

"'Excellent. Please look through it, and perhaps I make offer satisfactory to you.'

"Yun took one of my guns from me and pointed it at the Martian Commander. I kept the other Martian covered, using the one gun still remaining to me, and watching my charge every second. The four of us passed into the adjoining room. Jac Vanon stayed where he was, still sobbing uncontrollably on the girl's still bosom. I realized then that he was only a boy, and my heart went out to him.

"The Commander gazed through the telescope for almost one minute. There was surprise in the purple eyes when he turned to us, strive though he did to conceal it.

"'What has happened to the space-ship, Earthman?' he demanded.

"Ben Yun explained. 'Powerful beam of radio waves penetrates outward into interplanetary space from great station in Australia. Waves are proper frequency to detonate peculiar explosive neonoglycerine, known in Martian tongue as brarron. Waves strike space-flyer containing large supply of brarron, and space-flyer is blown to small fragments. Immediately set your telescope to view other space-flyer.'

"The Martian obeyed without a word, and gazed through his instrument once again. He straightened. 'It has not been harmed,' he remarked. Then he looked again and started, turning almost angrily to Ben Yun. 'It too! Did you know that it was to be destroyed this very minute?'

"'I was not sure. I did not know whether or not it contained any brarron.'

"'What is your offer?'

"'This. In five minutes that beam of radio waves will be directed at Mars, and will sweep swiftly over your red planet. You see what will happen wherever brarron is being made? You see what will happen in any warehouses where it is stored? You understand what will occur to any other space-flyer in which it may be loaded?'

"'Your offer is what?'

"Ben Yun took from his pocket a pocket radiophone of the latest design. 'This instrument enables me to talk to attentive and obedient assistants on continent of Australia. If I command in two minutes from now, radio beam is not projected. I give word of honor to delay for twenty-four hours, terrestrial time. You warn your world by splendid radio station at this locality. They have hours to insulate brarron by means of lead, or to depart for localities where barron is not present. Many lives will be saved on Mars in honorable return for lives of myself, friends here with me now, and young girl in other room. Do you accept?'

"'I accept. If no explosions take place on Mars in next five minutes, and you give your word to delay one earth-day, all of you may depart from here and reach Australia without molestation from me or my subordinates; and if adrenalin will save the girl, she lives too. I accept. Give your orders to those in Australia!'

"Ben Yun got in touch with his assistant at once and told him of the truce. His orders were carried out. His assistant reported back that the radio projector had been shut off. Yun turned to the Commander. The latter turned and led us back to the other room. The third Martian was still lying unconscious on the floor.

"'It will be necessary to restore her blood to the condition in which it existed during life,' stated the Martian emotionlessly, 'before you can be successful in reviving her with adrenalin. You remember where you captured this Martian?' he inquired, pointing to the figure on the floor.

"'Yes. In third room, through door here to right.' replied the Japanese.

"'Very well then. Throw the third switch in the fifth row. Behind you a large heavy portion of the floor will slide away, disclosing a subterranean vault where we keep our chemical and surgical supplies. If you do not trust us, leave your man here' (he pointed to me), 'to guard us with your pistols. Descend. You will find on the highest shelf, in bottles of Martian design bearing the label "Rannvor," a substance known to Martian chemistry that when injected into the veins of a supposedly dead person, will dissolve all coagulations in the blood, rapidly purifying and restoring the blood to its former state. You will find on the same shelf instruments for injecting this substance, and a blood-pump for restoring circulation. Then, by an injection of adrenalin directly into the heart, you may stimulate that muscle to activity, causing it to take up the work that the blood-pump performs, restoring life.'

"'Yes. And where to find adrenalin?'

"I saw the Martian commander hesitate the briefest fraction of a second.

"'You will find the adrenalin in other Martian bottles of larger size, stacked on third shelf from the bottom. Since capturing it from various places on the earth, we have purified and rebottled it. It bears the numerical label, R-37*a*.'"

SHERMAN again left us to answer an insistent phone call. While we waited for his reappearance, we discussed his story in low tones.

"I don't believe it," said John Stevenson as if trying to convince himself, "but I know Preston disappeared a long time ago and hasn't been located yet. But I don't believe it."

"You're a liar," stated Ralph White casually. "You do believe it, but you don't want to admit it."

"You're probably right," admitted Stevenson slowly, "I do believe it, in spite of my common sense. I'm going to get a drink of water while Sherman's phoning. Be back in a minute."

Ralph White turned to me in his superior manner. "Going to publish this too, Cloukey?" he asked indolently.

"Perhaps," I replied, "though I'll probably alter it somewhat. I may even insert a split infinitive."

I turned toward my friend William Simons.

"I'm convinced," he said, "but I wonder if I'll believe it tomorrow, in broad daylight!"

John Stevenson returned, bursting with news.

"There's something odd going on around here. Crandell Sherman listened to that phone for three minutes without saying a word. Then he left here so quick that he didn't have time to take his hat from the checkroom. I caught a glimpse of him going toward Market Street in a Quaker City Cab. I wonder what in the deuce——"

"So ends the sequel to 'Paradox'," said Ralph White.

THE END

The Driving Power

By Miles J. Breuer, M.D.

(*Continued from page* 311)

"Charles!" came his wife's voice through the closed laboratory door.

He leaped up and ran to the switches. With one sweep he shut off all the generators at once. Then he hurried to open the door. There was his wife, and behind her, two heavy men.

Behind him, the picture had faded, and the hum of the generators was dying down. But he had shut off the power so abruptly that the vast room was full of swirls and currents. A blast of air blew out of the door and the windows rattled. His ear-drums clicked with the sudden pressure. Papers blew about; a stack of them swirled off his desk, and his hat circled out of the window. Blue halos crackled and whirled everywhere.

His wife gasped at the rush of air, but regained her supreme calm at once.

"We couldn't wait," she said sweetly. "Here is Mr. Rosenthal and Mr. Trasky of the Amalgamated Amusements. They say that they never got your letters about the machine at all. They were so excited when I told them what it did. They have a check for a million dollars all ready written out for you. Isn't that wonderful? I know you won't mind the interruption, will you dear?"

Professor Grimm stood and stared blankly. Confusion roared in his head and he could not speak. He could not think. Sell the Integrator? Lose Amaranth? Be miserable? Was it worth a million dollars? Which his wife would spend?

On the other hand, he ought to be working. And this thing had kept him from working. There was the problem of solar power. His university and the scientists over the country were expecting things from him on the subject. He was rather ashamed of himself.

He groaned. He couldn't decide. His wife stood there, a jewel of the modern art of beauty-making, gazing up at him as a kitten might look up at a policeman. The two men waited respectfully.

He put his hand to his forehead and sat down at the board of the Integrator. He reached out for the "patterns"; he must have a look at them. An icy shock shot through him. They were not there!

With a gasp he remembered the papers flying out of the window. Out in the darkness the wind still tossed a few sheets about.

He leaned out. There were white sheets floating on the river.

He sank back. His "patterns," those sheets of paper covered with calculations, giving the settings of the spark-gaps and the milliamperages——

He shrugged his shoulders and pulled himself together with a sudden movement. He turned to the amusement magnates.

"I'll take you up," he said quietly. "Do you want a demonstration?"

"Never mind the demonstration now. We know you. Let's close the deal right up."

Professor Grimm signed the paper and took the check from the fat, red-faced man. The two men backed out of the door lifting their hats as the Professor's wife joyously threw her arms about his neck.

"Solar power," he was thinking. "Tomorrow I'll have to look up Langley's stuff on the pressure of light."

THE END

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. From what point of view can matter be considered imaginary? (See page 294.)
2. Does the raising of vegetables and animals for food purposes only seem scientifically logical? (See page 299.)
3. What are some of the inconsistencies which can be found in our system of law-making? (See page 302.)
4. What changes of atomic nature are supposed to take place in hot stars? (See page 308.)
5. Can we suppose transmutation of matter to take place in a Coolidge Tube? (See page 308.)
6. What did Moseley's and de Broglie's investigations prove about boron and carbon? (See page 308.)
7. What is a cosmic cloud? (See page 310.)
8. What period of decomposition may be assigned to uranium? (See page 333.)
9. What causes the electrical resistance of selenium to vary? (See page 333.)
10. What are *beta* emanations? (See page 333.)
11. Assuming force rays to exist, what would Newton's law of action and reaction tell us about them? (See page 354.)
12. What is the name of Neptune's moon? (See page 356.)
13. What is the similar name of Saturn's largest moon? (See page 362.)
14. If two force rays were issuing in diametrically opposite directions from a body and one was cut off, what would happen? (See page 368.)

Flamingo

IN this age of scientific and inventive progress, which sometimes borders on the miraculous, it is difficult to keep abreast of the newest "replacement." Slot machines have replaced human change-makers; mechanical cleaners now do the work of numerous workers. The screen—and now the vitaphone—have made possible the simultaneous showing of entertainment in many cities. It is now possible to stay comfortably in your home the while you listen to the best in music and talks. And television—when it is perfected—will undoubtedly revolutionize many of the recreations of the future. But all of the improved means of amusement are subject in great measure to the temperamental whims of the performers. Perhaps some enterprising young inventor, devoting himself exclusively to eliminating this troublesome feature, will strike the secret of the perfect robot entertainer! That would call for revolutionary measures, indeed. And certainly it is not impossible in view of our present progress.

Illustrated by MOREY

IT was one of those delightfully cool evenings in early autumn.

Tempus fugit . . . for here it was, in the Year of Grace, 1950, and I am getting old.

Standing in front of the tall, pier mirror, I surveyed myself from tip to toe.

A widower, with streaked, gray hair; face a bit youthful, thank Heaven, although not quite the vivacity and verve of the younger man, who went to glorious France in the Great War.

Other wars had occurred since then, but, owing to injuries suffered in the campaigns, in which I had been engaged, I was unable to take any active part in these latter upheavals.

Seating myself in my favorite chair, I took a tobacco capsule from the tobacco-jar, and, placing it in the little puff-pipe, a touch at the side of the pipe, and an electric spark had ignited it.

It was uncommonly fine tobacco from my son's plantation in Siam.

The American crop of tobacco had practically become extinct, due to the elusive, festive Japanese beetle, that had its first incubation grounds at the mouth of the Delaware River, back in 1927, thence spreading into Delaware, Maryland and Virginia, on the South, and New York, Connecticut and Maine, on the North.

There was some Burley tobacco left, but of a powdery consistency and quite unripe.

I leaned over and took from the bookcase a volume on the War of 1940 between Russia and Italy.

However, I felt ill at ease, and threw the book back on its shelf.

It seemed too wonderful an evening to remain indoors.

Leaning back, my mind reverted to enjoyable evenings of the past . . . of the days of the cinema and sound devices now long since forgotten.

Few people in 1930 had had the vision to grasp the fact that the constant experimentation with synchronization of moving pictures with sound and talking, the amalgamations of great artists, the increasing overhead, would overthrow the dynasty of Filmdom.

It had been a source of keen annoyance to me that films had become as extinct as native tobaccos.

Well, it had to be, I suppose. Did not the good people of my grandmother's age rise in rebellion upon tallow-dips, replacing same with the gas flame, and later with the Mazda lamp?

By man's own individuality, his own superiority, his iconoclastic ideas, he had, in his attempts to improve the drama and moving pictures, created a machine that had overthrown their progenitors.

Of course, master minds immediately were compelled by the loud outcry to devise new ways to amuse the masses.

It had remained for one Simeon Philo, an astute thinker of advanced years and brain, in collaboration with a young genius, in his late thirties, by name Trevor Matthias, to evolve a plan that would revolutionize the spoken drama of stage-humans and of the screen as well, that had so signally failed.

Philo, like his predecessor of antiquity of the same name, thought it fitting that Greeks and barbarians alike should share in any absolute good.

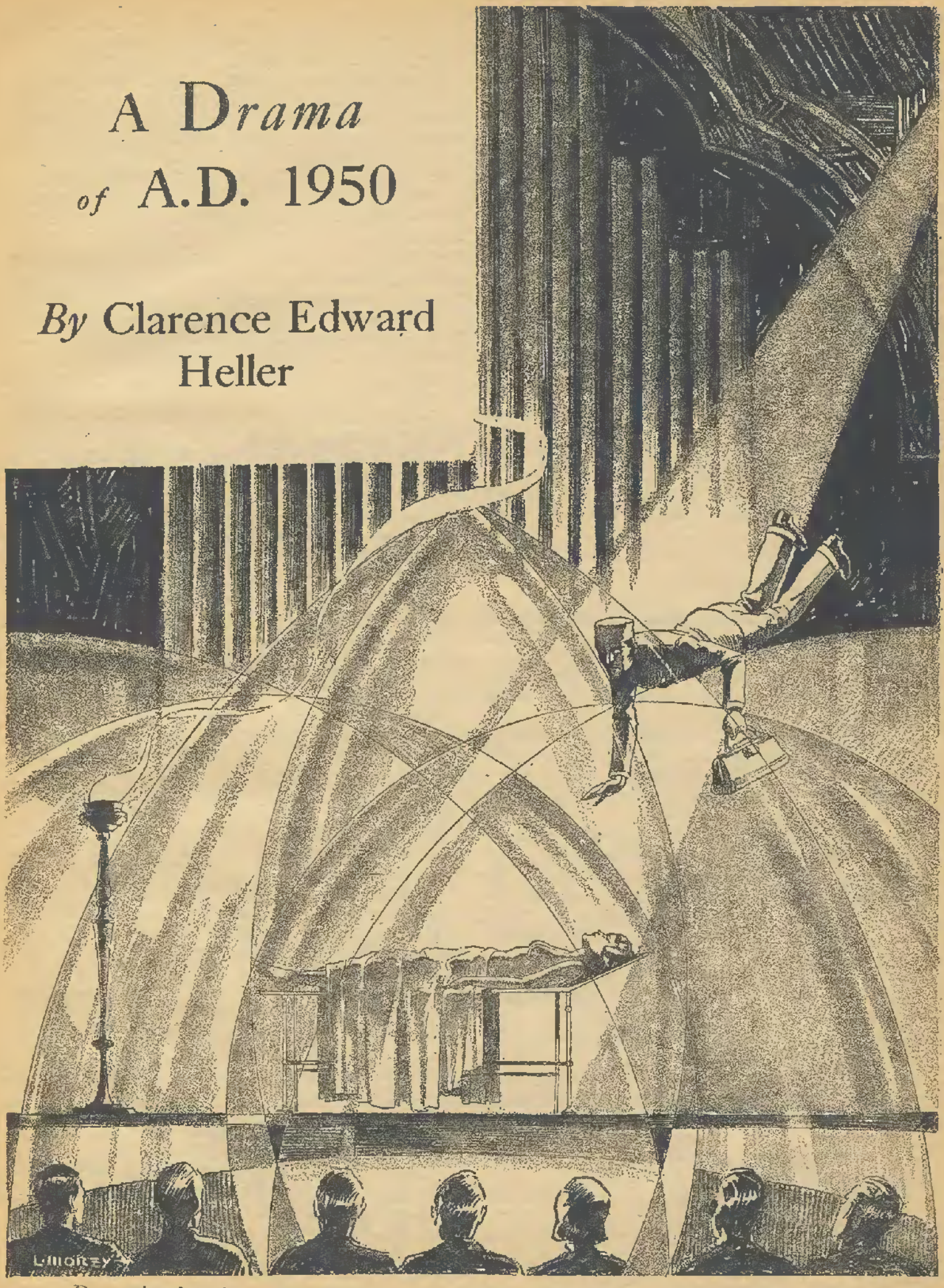
The rich and the poor would benefit by his mind.

Ingenious Philo recollected that back in 1928, mankind first began experiments with mechanical contrivances called "Robots."

Did not one robot open a national fair in 1929? Did

A *Drama* of A.D. 1950

By Clarence Edward Heller



Down in the pit was a long white operating table. . . . From a door high up in the wing the robot doctor entered.

not robots officiate at cornerstone layings; proxied for speakers at banquets and commencement-day exercises; testified for absent witnesses in the trial courts?

By accident then had the young assistant, Trevor Matthias, one night stumbled upon a great secret.

All that long night he had toiled in the laboratory of the great Philo, and in the morning laid before his superior, a robot that almost resembled a woman!

Heretofore all robots had been masculine.

Matthias went one step farther . . . he evolved sex, yet in such a delicate manner that man's imagination could conceive no evil upon looking at her beauty.

For, in the processes of the years man had become accustomed to look upon his brother and sister as one family, minus sex, the same as flowers dwell together in spiritual beauty.

His female robot sang exquisitely as any diva, and in any language desired.

She could also walk, dance, execute contortions, fly, climb, circle the ceiling.

Naturally, the same principles were applicable to the male robot.

Philo was jubilant . . . and the Press that night gave its entire first pages to the discovery.

I laid down my puff-pipe upon the stand, blew out the last cloud of nicotineless smoke, and arose from my seat.

It was a wonderful age in which I lived, and what of the morrow?

WANDERING aimlessly about my room, an idea presented itself to me. I would descend to the floor below and pay my respects to the Van Swaggers.

Grasping a pole in the hallway, and touching a key, I immediately was carried on a circular platform to the floor beneath me.

Knocking upon the Van Swaggers' door, a reflector overhead carried my impression to their living-room, and soon the door opened, and admitted me.

A robot took my hat and coat, for I was dressed for the street.

The family greeted me warmly; the elder Van Swagger had been playing a game of international chess with an opponent in Switzerland, over the wires of the Atlantic Cables, Incorporated. I did not interrupt the game, but watched him take a bishop, as he talked into a receiver, and baited his victim some six thousand miles distant.

"Won't you listen to the closing numbers on the photophone, Alonzo?" queried Madame Van Swagger, who had known my wife when she was living.

Did I omit to mention that my name is Alonzo Hepburn? Pardon my omission.

I thanked her, and inquired for Miss Dolly Van Swagger, who, her mother informed me, was dressing.

"Is she going out?" I asked, feeling a trifle disappointed.

"Oh, no," replied her mother, "just dressing in case company dropped in."

"I am not company," I laughed, at which the mother smiled.

I enjoyed some of the singing of the concert program, which was being broadcast by the Photophonic Process, Ltd., of Great Britain, founded in 1935.

Young Tom Van Swagger interrupted the concert to get a ball score of the indoor baseball game then in progress in Toronto, Canada, with a rival team from Tokio, Japan, before an estimated audience of one hundred thousand persons.

Again the music proceeded, and at this juncture, Miss Dolly Van Swagger, a demure lady of some twenty-six summers, but appearing to be but eighteen, made her appearance, gowned in soft white, bare-footed, and with hair braided down her back.

She greeted me shyly, because I am old enough to be her father, although, when I tell her this, she always grows angry and says I humiliate her before the household.

"Why don't you two young people go into town and see "Flamingo, the Great Extravaganza," at the Times Square Community Theatre?" queried the mother.

At the word "young" I gave the mother an arch look, and Dolly catching it, turned on the pivot of her foot and took a seat near the Photophone.

"Will you accompany me, Miss Dolly?" I eagerly asked.

She affected to pout for a minute, then turned to me and smiled her assent.

"What time is it now?" inquired the mother.

"Just eight-thirty exactly," I responded, glancing at the luminous dial on the ceiling.

"You have one-half hour to get there, and Dolly will take but five minutes to change to street or theatre apparel," said her mother.

"Where shall we go?" asked Dolly of me.

"Your mother had suggested 'Flamingo,'" I reminded Dolly gently.

"Oh, yes, to be sure," she replied, reddening under my gaze.

"Well then, dear, be off, for you ought to be in your seats by nine o'clock," her mother answered briskly.

Excusing her lovely self, the white-clad Miss Dolly rang for a robot, and presently a female appeared, who, opening a door, preceded her mistress to the bedchamber.

Ten minutes later a vision in cerise appeared, in the person of Dolly, appropriately garbed for "Flamingo."

Here I must mention that in this period the ladies all dress in affectation of the central figure in a drama that they may witness.

Inasmuch as the star "Flamingo" was garbed in a rich rouge, women affected that shade in attending.

Miss Dolly was dressed in brilliant feathers, of a hen-pheasant, possibly. Her head-dress was the same. She wore sole-slippers, of course. I did mention, I had hoped, that shoes and evening slippers had long since gone out of date for women.

Tom Van Swagger was now listening in on an ice-hockey game broadcast from St. Moritz. Thus, both father and son were contacting Switzerland at one and the same time.

Mr. Van Swagger appeared to be having difficulties, however, for his brow was furrowed in deep study, as he just grunted a "Good Night" to us.

Once out in the corridor, I touched the key, and both grasping the pole, we stepped on the circular platform and were conveyed to the first floor.

Walking to the doorway, we emerged into the cool, night air, and taking Miss Dolly's wrap, I threw it around her white shoulders.

Pressing a switch on the outside of the hotel, a door flew up. Depositing two spheres of metal in a slot,

we descended one flight, and took places on the moving sidewalk.

It was a leisurely journey of fifteen minutes, and Dolly amused herself glancing at the electric displays in the underground stores. Far below us we could distinctly hear the roar of the vehicular traffic tube.

IT had been my thought to attend the premier of "Flamingo," but I have an aversion to huge, overflow crowds. *The Morning Electogram*, which daily flashed the news to me across my dining-room wall, told me the morning after the premier that fifty thousand persons had been turned away the night previously.

Alighting at Forty-second Street, we took the escalator to the street level, and traversing a circular building, in which were located some two thousand families, we entered the largest theatre in the world.

What a vast place it was!

Seating seventy-five thousand persons; containing restrooms; a restaurant where good meals could be obtained at the nominal figure of only two dollars per plate; baths; masseur; coiffeur; hospital; library; tearooms, smoking-rooms; international telephone service; bridge-whist room; tennis courts; photophonic concert room; in short, a resort for kings.

Upon the roof of the building was assembled quite a fleet of airboats, that came and departed at all hours for distant points.

The show would begin promptly at nine o'clock, and it lacked but a few minutes of the hour.

Observing on the frame, which was located at the fourth aisle, West, that seats fourteen and fifteen were vacant, as indicated by red lights bearing numerals, we made our way, unattended, pausing at the designated tally light at the row entrance. We easily found our places, which were distinguished in the semi-gloom by pale, yellow signal-lights atop each seat. Upon taking our places, the signal-lights were automatically extinguished.

Surrounding the theatre were large, upright mirrors, probably fifty feet in height by twenty feet in breadth.

The show itself was reflected in these mirrors from the front, or Master Show. Seats in the Master Show section were, of course, more expensive.

People sat in tiers, in the mirror section, one elevated above the other, with perhaps two thousand souls in each alphabetically arranged portion.

Our seats happened to be directly in line with the Master Show.

THE lights were suddenly extinguished, and a large disc, forty feet in diameter, under the stage level, began to revolve slowly. Faster and faster it rotated until faintly the notes of music could be heard. Attaining full speed, beautiful harmony floated out over the great theatre.

This instrument was called the Orphonium, which broadcast music direct from the Picadilly Circus Dance Emporium, in London.

Then, scarcely perceptible, it changed over to the latest "hit" . . . the theme song of "Flamingo" . . . "Red Love."

It was a song concerning a lovely woman, whose heart, pierced by the knife of a rejected lover, was sutured by the skill of a doctor's needle. The doctor, you may be sure, was madly in love with her.

The blood-drops had ceased to surge with the collapse of the aorta, and this was intermingled in a color and harmony scheme of red, as the doctor strove to revivify her.

Now, the music ceased altogether, and in the darkness, I felt the tiny hand of Miss Dolly timidly steal into mine for mutual protection, as it were. I gripped her little hand more fervidly than the occasion demanded, at which I felt her snuggle toward me.

Suddenly, a rattling, as of chains being run through a hawse pipe, or from the prow of a slave-galley . . . and a tropical number . . . broadcast by the Underseas Photophone Subsidiaries, of Great Britain and India.

The lilting tantalizing notes of "Euphemia, a Snake Charmer's Dream of the Ganges," caused the scattered audiences to sit up in anticipation.

Illuminated signs at each side of the box-stage announced the musical numbers.

From the box-stage itself, which had usurped the screen and familiar stage of the period 1930, now *de trop*, large rose-colored curtains fell back, disclosing undreamed-of scenic splendors.

A plantation scene in Africa . . . a chanting of a solemn dirge, by invisible voices . . . and then, in a halo of light, the central figure in the brilliant spectacle of "Flamingo," the beautiful robot Mlle. Flamingo, pirouetted across stage on tip toe.

"What a beautiful woman!" ejaculated Miss Dolly.

"She is not a woman, but a robot," I answered, to her amazement and unbelief.

"You are jesting, Alonzo," she answered, calling me by my first name, and thrilling me, old fool that I am. Of course, the injection of radium-iron had taken twenty years from my appearance, but, dash it, I was no longer a boy.

I dismissed such thoughts as unbecoming, and turned my mind to the brilliant personage of the Drama.

Simultaneously, allow me to mention, in each mirror that I have described, the action of the Master Show was being faithfully portrayed.

A young man seated in front of me tilted back his reclining, wicker-chair, and sighed deeply.

Now, from her lips emanated, far more gloriously, I will admit, than any human singer ever had attempted on the old synchronized screen of the Thirties, so archaically illogical . . . the lovely notes of "Red Love."

I closed my eyes, lost in a reverie, occasioned by the sublimity of the voice.

It gripped Miss Dolly, too, for I perceived when I opened my eyes that she was staring at me like a startled fawn.

This was the identical number that the Orphonium had played as a Prelude.

From the wings of the box-like stage drifted exquisite phantom robot shapes, each one taking up the chorus, until the playhouse vibrated with the harmony.

From the Deaf Section, in which those, who were so unfortunate as to be deprived of hearing, were seated, the cut-in waves of sound, from the Arboreal Hearograph, a peculiar sponge-like contrivance, that hung, suspended, overhead, rendered each one's affliction neutral.

For the blind, let me add that there was a reserved, though costly, Solarium, into which poured the beneficent rays of a Spectrumoscope, located on the ceiling, and penetrated the brain-cells of each living person seated therein. This reproduced on the extinct retina images

of light, that gave them intelligent reading of the Show.

Thank God for these inventions . . . Deafness and Blindness removed from Man, who had evoluted high enough in the process of the things of the Cosmos to receive direct messages from his Creator.

But, I must not digress in this manner, except to give you some ideas of the marvelous improvements of the era.

SCENE Two then burst upon us, and again, the exotic Mlle. Flamingo robot circled around the stage, gracefully as a human being, performing contortions hitherto unknown, and unattempted.

Bird-like robots now descended from the ceiling of the theatre, and where they came from I never can determine. They circled the vast audiences, dancing, twittering, chirping, and from miniature photophonic cells echoed their music, until the vast theatrical coliseum was aflood with melody.

I cannot, of course, attempt to describe the entire three-hour performance.

It shall suffice that I shall tell you the high lights of the beautiful, transcendingly-lovely, Extravaganza.

In the fourth scene, of the fifth action, occurred the murder.

Heads were craned forward, and Miss Dolly placed her head on my shoulder, to which I made no objection.

The theme song once more crept over the entire house, with its tangled tale of red love, played by the indescribably beautiful Orphonium, and taken up by a chorus of three hundred robots, who burst from their habitat, and floated about the theatre, upon invisible wires, each one seeming a living thing of loveliness and song.

A hush fell over the excited audiences, as the lover of the spectacle, the robot Doctor, arrived in mid-air, in a marvelously contrived and lighted bird robot . . . a flamingo . . . all in red and jeweled effects, scintillating. . . .

When the bird alighted upon the stage, he sprang from it, and ran over to Mlle. Flamingo. Prostrate, heart severed by the knife of the assassin, she lay a beautiful thing of pity.

The robot Doctor recoiled from the sight, and his grief was pathetic to behold. Miss Dolly assured me, in vehement undertones, that she felt certain he was human.

Once more I corrected Miss Dolly by telling her the Doctor was a robot.

There was an intermission at this part of the program of fifteen minutes, and as the hundreds of thousands of lights appeared, as if by magic, brilliantly lighting the scene, we were aghast at our large audiences.

Every seat was occupied, and none were standing, for it was a rigid ordinance of the police department of the great metropolis that each person must be seated, or no ticket was to be sold.

There was a special box reserved for distinguished guests and royalty.

Someone in the audience, with ferret eyes, detected the inventor, Simeon Philo, in the box, and the admirers present demanded a speech.

He was very self-conscious, however, and to all the demands, was adamant. He arose and bowed several times.

Robots appeared in the aisles carrying napkins, and wheeling tea and coffee wagons.

Miss Dolly and I sipped some delicious tea, which the female robot sugared to perfection.

The lights blinked, and we deposited our cups and saucers in a groove, under our seats, a chain-elevator immediately taking them below to the kitchens, while the groove closed up quickly.

The fifth scene of the fifth action disclosed the stage changed and set . . . with a marvelously contrived amphitheatre, containing row upon row of seats.

Robot students could be determined hurrying each one to his place.

Down in the pit was a long, white, operating-table.

Miss Dolly groaned when the increasingly greenish light betrayed the form of Mlle. Flamingo, stripped of all embellishment, with the blood of the congealed wound upon her breast.

My reader must remember that through due processes of invention, we had arrived at a state of nerves, whereby we were able to witness sights, that in 1930 would have prostrated the entire audience.

From a door high up in the wing, the robot Doctor, garbed in regulation wine gown and covered head, now entered, followed by two nurse and three interne robots.

The Doctor faced the audiences . . . every eye and ear was strained.

He began to sing, and the burden of it was that his Love was cruelly dead . . . and he then half raised her so that the thousands of witnesses could perceive the truth. Her heart, rent in twain, was lifeless utterly, and he sang of his hopes that their love, destined to be so red, could survive the grave.

The embryonic doctor-students now rose in a body and chanted the awful dirge of *"Corpus Delicti,"* a sort of litany, as nearly as I could guess at it, telling the substance of the terrible offense to the dead.

A crash of music . . . keyed to its fullest extent . . . so vast in volume that several prisms in overhead chandeliers broke, and narrowly escaped doing serious mischief as they fell upon the seats in the Deaf Section.

The Orphonium was now playing, in all its awful solemnity, the world-famed Rehabilitation March from the "Souls Afloat," by the Curator of the Research Department of Oxford Museum.

THIS was, let me explain to the uninitiated, a daring composition of the composer Liszt, in Spirit World. The Curator, aided, of course, by his profound studies of the spirits, had succeeded in establishing communication with Liszt, and from him, had obtained and put into words and music the inspiration of a Soul floating in the ether. Literally, therefore, "Souls Afloat" expressed the theme. Of the sublime feeling of the body after death . . . that never more can be associated with its Soul. The Soul, being immortal, and the body, corruptible and of the dust, must forever leave the thing corruptible and become a thing, separate and apart. Many would not believe this truism, but the honest Curator had explained, quite satisfactorily, to many bodies of scientists all over the world, which were radioed as far as Jupiter and Mars, that a perfect development like the Soul cannot more inhabit an imperfected development like the Body, after worms had eaten the flesh.

In the atmosphere, a spirit shape now was making itself visible, which, in unearthly fashion, loudly protested that the urge of the robot Doctor had brought it almost from the boundaries of Spirit World.

The robot Doctor, with demoniacal laugh, caught the spirit, tucking it into the wound, which he now deftly closed, and tied the threads.

He again faced the audiences and in his eyes was a forlorn hope.

"I have recalled, by the Miracle of Love, the Soul of my Beloved. Had her body been corrupted, I would have suffered instant annihilation for my temerity. But, her lovely body is still preserved. Without the spirit, which is the Soul, even though my skill could produce life itself, my work would be as naught. For, who would wish a Love without a Soul?"

These words he called forth, ending in a great sob.

The student body now took up the burden of his despair, chanting, in unison . . . "For, who would wish a Love without a Soul?"

We could almost hear our own hearts beating.

Now, the despair of the robot Doctor began to turn into a great joy.

He advanced to her form, peered at it keenly, then cried, in a mighty voice. . . .

"Look! LOOK!" . . .

Mademoiselle Flamingo was actually rising from the table!

With one white hand to her heart, and guileless, as her lovely body faced the immense assemblage, she smiled at her robot lover.

"You live, you live?" he asked her, incredulously, now that his work of love had been successful.

"Life for thy life," she answered, sweetly, holding her arms out to him for his embrace.

"Red love, Red love," . . . and with these words, he gathered her form close to him.

The student-body now sang paeons of joy.

Celestial music radiated to all quarters from a harmonium, suspended in the center of the theatre ceiling, some seven hundred feet over our heads.

Gradually, as the startled and semi-hypnotized audiences gazed with strained eyes at the scene, the robot Doctor and Mlle. Flamingo, still in a tight embrace, were wafted, mysteriously, into thin air, the bejeweled bird, "Flamingo," hovering over them until they were lost in the sunset.

Amid a crescendo of divine music, the amphitheatre scene melted out, as ice dissolves upon a window-pane under the genial warmth of a freshly-lighted fire.

A shower of lovely flowers now fell upon every one of the many audiences.

Among my souvenirs of this brilliant Extravaganza there is left a rose, which I took from the scented hair of Miss Dolly, which she allowed me to keep.

The audiences of seventy-five thousand persons arose and cheered like mad.

In the Master Show section were possibly fifteen thousand souls and in the Mirror and Special sections sixty thousand souls.

As we peered over the brilliant scene, Miss Dolly was almost overcome by the overwhelming greatness of the spectacle.

NOW the theatre, as one unit, rolled back upon its hinges, so to speak. Glass door after glass door noiselessly rolled upon each other until all was one vast, open expanse.

After the audiences had made their exits, the seats automatically sank into the floor.

There would be no danger of panic with such preventive measures.

Later in the night a dance orchestra dispensed music to those who cared to pay a slight fee, and dancers would be gracefully scurrying over the very places where we had been seated.

It was now a few minutes past twelve o'clock.

We made our way to a grill one level below the theatre floor, near the moving sidewalk.

I ordered some chops, toast and wine for two.

"To think," said Miss Dolly, her face flushed, while waiting for the robot waiter, "what a marvelous show, solely with robot artists."

I was glad to perceive that the entertainment had been so fascinating to her.

It did seem inconceivable that anything mechanical could act with such precision without one flaw.

At this juncture, the smiling face of the female robot waitress interrupted my musings and Miss Dolly's enthusiastic comments.

The supper was delicious.

"I am grateful for these robots, Alonzo," Miss Dolly quaintly remarked.

"And, why?" I asked her.

"One does not have to be, er . . . jealous of you fascinating men even though the waitresses are so charming."

I laughed heartily at this, and cut a cigarette from the concealed cigarette-string in the mechanical cigarette humidorium.

Cigarettes came on long ropes, some forty feet in length, allow me to explain, and at each clip of the cutter one had a freshly cut smoke.

After a few minutes I discerned the Manager of the theatre approaching, whom I knew intimately.

"How are you tonight?" he asked me, extending his hand, and shaking mine cordially.

I introduced Miss Dolly to him, assuring him that I felt fine.

"And the Show?"

"Exquisite," we both answered in one breath.

"You know," he began, taking a chair with us, and accepting a small glass of wine, Ziegfeld, the glorifier of women of his period, turned his houses into robot shows. But, ah, they were marvelous! His did not, however, produce on the same extravagant plan as I do in the Community Theatre."

I nodded my head, comprehendingly.

"When a robot opened a national show back in 1929, it occurred to me then that they would feature in a big way in the theatrical world.

I can recall many amusing situations as the public first began to become acquainted with the new world marvel, the robot. One night Ziegfeld told me that a certain rich type of stagestruck Johnny of those days was much enamoured of a beauty in one of his choruses. Ziegfeld was then running in several female robots with his acts, and the manner was laughable in which the audience would try to detect the human chorine from the artificial.

Well, this certain devotee of the show waited outside an hour in a pouring rain, on West Fiftieth Street, and when a lovely lady emerged to step into a cab, he rushed forward and thrust a bouquet of orchids in her hand, which contained an expensive ring concealed among the flowers.

(*Continued on page* 345)

The Message *from*

By David M. Speaker

Author of "The Disintegrating Ray"

GREAT strides in the field of photo-electrics have been attained through the use of selenium. That does not mean, however, that there might be no other element in existence with stronger photo-electric properties than selenium—strong enough, perhaps, to make possible enormous distance radio communication. If any of the planets are inhabited by intelligent beings, or forces, or whatnot, interplanetary radio communication might become an actuality when such an element is discovered. Mr. Speaker is well known to our readers. In this story he combines excellent writing with plenty of science of unusual interest.

Illustrated by MOREY

Prologue

AFTER I had sweltered in the torpid city heat for over a month, Wadson's letter almost made me believe he was inspired. Needless to say, I jumped at the opportunity thus offered me to spend several weeks with him in the Catskills.

My friend was there to meet me at the station in his automobile.

"It's great here!" he exclaimed. "Hunting, fishing, boating all season. But there's a surprise for you. I've brought over a regular laboratory and I've . . ."

"A laboratory? I never knew you were interested in science. And even if you are, what on earth possessed you to bring your paraphernalia out to this place? Must have been an awful job."

"I thought it would be a surprise," said Wadson. "You see, I've conceived a sudden passion for physics and chemistry in the last year or so. I accidentally met one of my old professors and we got talking about science and so forth. That was the beginning of it, and I brought a lot of stuff along with me so that I could work uninterruptedly."

"Well," I exclaimed, "you never do things by halves, do you? What's going to happen to your lonely guest while you are pottering in your laboratory?"

Wadson smiled.

"I suspect," he said, "that the 'lonely guest' will be interested in pottering in the laboratory himself when he hears that there is a twelve-tube combined radio and television set under construction there."

By this time we were passing through the driveway leading to Wadson's home. The building was roughly rectangular, with an adjoining wing for the laboratory.

"How would you like to see my lab first?" Wadson suddenly asked.

The laboratory which we entered immediately was a room of modest dimensions, but its chemical equipment was complete. The whole place was littered with chemicals, beakers, tubes and bottles, but there was little that bore testimony to any interest the owner might have in physics. I said as much to Wadson.

"Yes, that's true," he answered, "for you see I got the chemicals and chemical apparatus first. Then I started the physics end with the television set. As a result I forgot everything else but that. Look here." With these words he attracted my attention to a closet at one end of the room and opened the door. Within was the largest apparatus for television work that I had ever seen. The immense scanning disk was equipped with lenses after the latest pattern, and the whole machine was connected with a twelve-tube radio set.

"Looks nice, doesn't it?" he grinned.

"It's really great," I replied, "and it must have cost a good deal. How large an image does it form?"

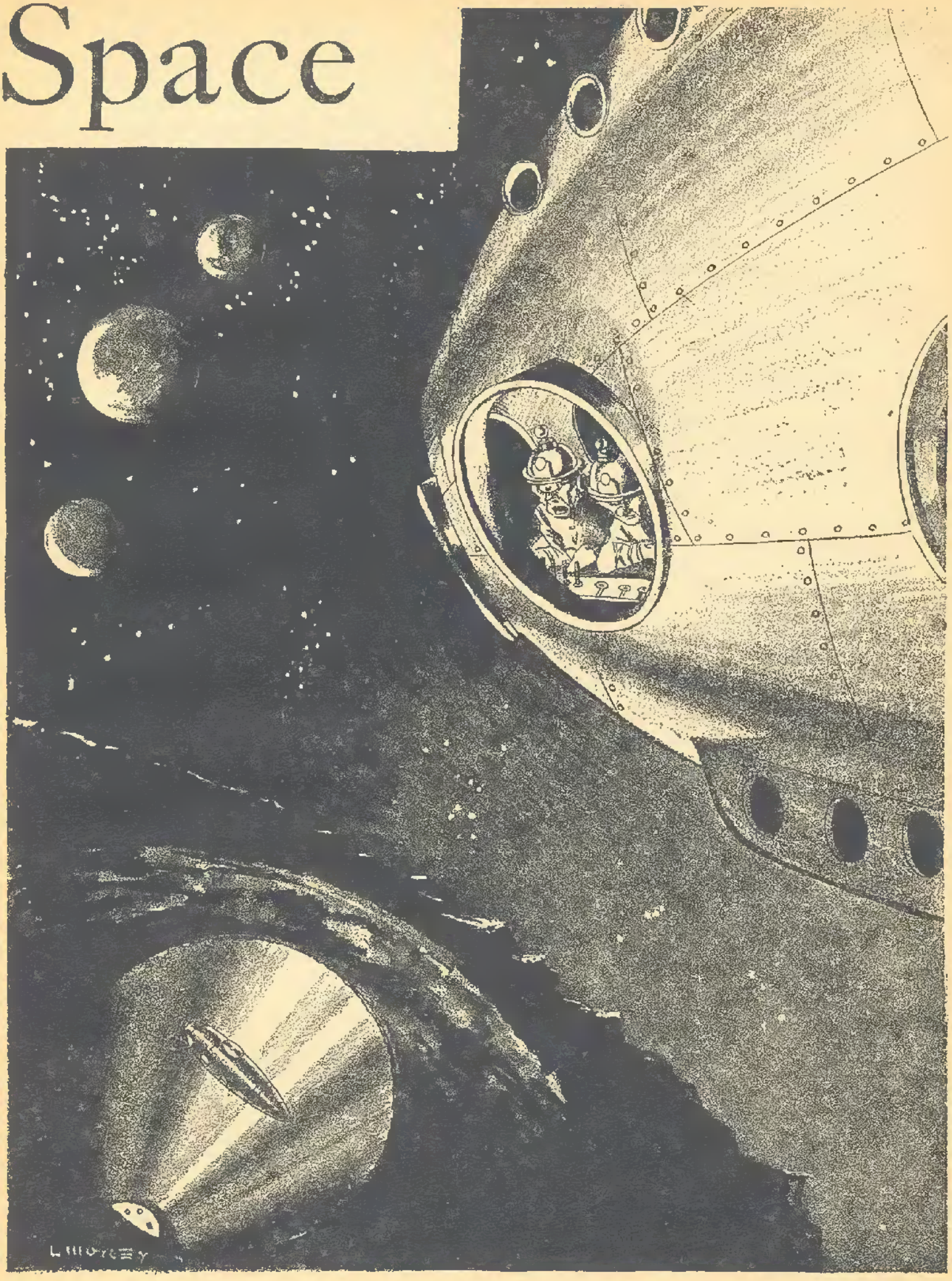
"Well, it cost me about $250.00, including the radio and tubes, but it is not quite finished yet. The image will be about three by three and a half inches when magnified. Not very large, you see, but it will have the advantage of being clear and free from distortion. I may arrange to have it projected on a ground-glass screen."

And thus I whiled away the evening in Wadson's company as he enthusiastically pointed out the different features of his television set.

But here I find myself digressing from the self-appointed task which I have set, the narration of the Message from Space, which has created so much interest and discussion in various scientific circles here and abroad. Therefore I will pass on to the first episode, the advent of the meteor.

It was towards the second week of my visit that we went to bed rather earlier than usual one night, having planned a fishing trip for the next morning. I was sud-

Space



As we approached closer, these areas proved to be the openings of great shafts, which apparently went far below the surface

denly awakened by a deafening roar, immediately followed by a terrific crash. At once I jumped up and raced to my friend's room. As I switched on the light, I was horrified to see Wadson lying unconscious on the floor amidst the ruins of his bedroom. A hasty examination revealed that his head had been hit by a falling picture, but in a few minutes he regained consciousness. Now that my anxiety was relieved, I inspected the damage more thoroughly. All the evidence pointed to an explosion. The bed and other furniture had been knocked over and great lumps of plaster had fallen from the walls. Wadson was by now completely recovered from the shock and he came over to join me.

"Looks bad," he said. "Don't you think we had better go around and examine the rest of the house?"

"If you're all right, I guess we can. What, do you suppose, caused it?"

"I can't imagine. I don't keep nitroglycerine or dynamite lying loose around here. Might have been an earthquake," said Wadson.

"An earthquake would have lasted longer and besides, my room wasn't even touched. If it were an earthquake, the entire house would have been demolished." Just then a large piece of plaster fell from the ceiling, narrowly grazing my arm.

"We really ought to get out of here before the whole thing comes down," Wadson observed. "We will probably find the cause when we investigate." As we stepped outside into the corridor, the full extent of the damage became apparent. That section of the house near my friend's room had been almost completely destroyed. So far we had been unable to assign any cause to the destruction.

"It's fortunate," said Wadson, "that the lab wasn't ruined. As it is, there is still enough of the house left to live in."

"You seem to take it pretty calmly," I answered.

"It can't be helped and we might as well make the best of it." And with that we continued our inspection. The doorway at the end of the hall was blocked with fallen débris which prevented our further progress in that direction. Thereupon we turned to another opening.

"It seems to me that I smell smoke," remarked Wadson, "and I believe it comes through here," indicating the obstructed doorway. Even as I looked I could see faint, hazy whisps rising from the bottom of the door.

"You're right," I said. "The place must be on fire and we had better get around there at once." In a few moments we were out of the corridor and at the other side of the door. At first I could see nothing but choking, blinding torrents of smoke. However, the gray veil was suddenly borne away by an air current and we were able to get a clearer impression of the wreckage. The roof above had been crashed in, leaving an irregular opening facing the sky. Just below it was a similar hole in the floor which now revealed itself as the source of the smoke. We descended to the ground floor. Here the vapors were almost overpowering, but by the aid of hastily improvised gas masks, made of wet towels, we succeeded in approaching the suffocating area. There, in the very center of the swirling wreaths of vapor, we were astonished to see an enormous piece of red-hot metal smouldering in the ruins.

"A meteorite!" The thought had occurred to both of us simultaneously.

"We had a narrow escape that time," said Wadson. "It might have crashed down on our heads just as well as here. There isn't much of a fire, fortunately, so we won't have any trouble in that respect. And now I'd like to make an analysis of the meteor." With the aid of a few buckets of water, we were able to quench the last sparks and flames around the great aerolite.

By this time the metallic mass had cooled to such a degree that we were able to make an examination. With great care we detached from it the clinging bits of plaster and charred wood which it had gathered on its downward flight through the roof and carried it into Wadson's laboratory, where we deposited it on a bench.

Even a superficial analysis of the substance was enough to show that, as in the case of almost all other meteors, it was metallic iron of a fair degree of purity. My friend, however, was still unsatisfied.

"I'd like," he said, "to make a spectroscopic examination. That would be the quickest way of determining whether there are any other elements mixed with it such as carbon and silicon."

Accordingly he made preparations for his analysis. His method was very simple. He removed a small portion of the metal and held it in the flame of a hydrogen blast-lamp until it was red hot. Then he examined it with a direct-vision spectroscope.

"Nothing unusual that I can see," said Wadson. "There are faint traces of sodium. Of course there must have been more of that element originally, but it was mostly burned up in passing through the atmosphere. Or wait, I think I see something. It looks like a slight discoloration near the sodium line. It's probably a flaw in the instrument, though. However, it may be something. I'll try another spectroscope." Wadson rose and walked to a near-by cabinet where he kept his more delicate pieces of apparatus. He took another spectroscope and through it peered intently at the glowing metal.

"Same discoloration," he said. "I think I'll take a specimen from nearer the center of the meteor." We drilled a large hole to the interior and succeeded, after much labor, in extracting some borings from the bottom. This, too, he submitted to a spectroscopic analysis. While he looked through the eye-piece of the instrument his face changed. First a puzzled look, then a gleam of triumph.

"Bill," he said, "I'm pretty sure I've discovered a new element. Just come here a minute." He handed me the spectroscope and bade me examine the glowing bit of metal. Without a doubt he was right. Close to the narrow sodium line was an unfamiliar band of orange.

"Well," said Wadson, "what do you think of it?"

"Yes, it looks as though you've discovered a new element. We'll have to call it 'wadsonium' in your honor. I think it is quite probable that this meteor does not come from the Solar System at all, for of all the elements found in solor meteors so far, not one had been previously unknown on the earth."

"That increases the value of the discovery," said Wadson. "Now I'd like to separate some of this new element from the others and determine its properties, both physical and chemical."

BY this time it was almost four in the morning and we were very tired as a result of all the preceding excitement, but it was only with the greatest difficulty that I persuaded Wadson to leave his meteor for a while and get some sleep.

When we got up the next morning I wired to the nearest city for a squad of workmen to repair the damaged

house, for I knew that my friend, immersed in his scientific work, would never think of attending to such trivial matters.

Meanwhile I spent most of my time watching Wadson's proceedings in the laboratory. With the skill and patience of the true scientist he was gradually arriving at a number of important conclusions regarding the unknown element in the meteor. He had already ascertained its atomic weight and was not a little surprised to find that it approximated the comparatively large number 327.81. It was about three days later that he announced that the atomic number was 106. He was radiant with joy.

"You see," he explained, "this indicates not only one unknown element but a whole series of them which must exist between uranium, which has an atomic number of 92, and wadsonium, whose number is 106. Fourteen, in fact. However, due to their high atomic weights, they are probably very unstable and that would account for their absence from the earth at the present date. It may be that wadsonium bears the same relation to uranium that uranium does to radium. Of course then it would very likely have a large half-period and there might be traces of it somewhere on this planet that haven't been found yet."

"How do you account," I asked, "for the fact that almost all of the wadsonium came from the interior of the meteor? If you remember, specimens from the surface only contained minute traces."

"That," said Wadson, "is a matter to which I have given considerable thought. My theory is this. The meteor must have originally consisted of wadsonium only, but during the course of its wanderings through space it encountered vast numbers of very tiny meteorites, cosmic dust as it were. These gradually gravitated towards it on account of its superior mass which, previous to its passage through our atmosphere, must have been enormous. Now you may picture this big chunk of wadsonium embedded in a tremendous shell of infinitesimal particles, largely consisting of iron. Then, as it traversed the earth's atmosphere, the mass began to glow and finally to fuse. The wadsonium at the center began to spread itself through the entire mass by diffusion. But before this process had an opportunity to get more than a start, it hit the surface of our planet and slowly cooled, with most of the wadsonium still in its original place."

"That's splendidly worked out, but . . ."

"Yes," interrupted Wadson, "it's only a hypothesis and there are a great many 'buts' in it. Anyway, it really doesn't matter very much. The important thing is the wadsonium which I think I have succeeded in separating almost completely."

With a smile he held up for my inspection a small glass-stoppered bottle which was about two-thirds full of a silvery metal looking just like magnesium. But there the resemblance ceased. Magnesium is remarkable for its lightness, while the half-pint or so of wadsonium must have weighed almost twelve pounds. In my surprise I nearly dropped the bottle. Wadson smiled.

"Heavy? That's the effect of the high atomic weight."

"How does it behave chemically? Would you call it an active element?"

"Rather active. It decomposes steam at high temperatures and displaces hydrogen from cold dilute hydrochloric acid. In the air, as you can see, it forms a thin film of the oxide which prevents further corrosion. It's very much like aluminum in that respect, and it is slightly radioactive. I should say its rate of decomposition is about one-tenth that of uranium, which would give it a half-period of 50,000,000,000 years, making it many times as old as this planet. No doubt, as I said before, there are considerable quantities now existing, but they are most likely to be found below the surface."

Then the man in charge of the repair work came in to ask about one or two particulars regarding the reconstruction and our conversation was broken up. As I had to drive into town later for some supplies that were needed, I heard no more about the wadsonium that night, but my friend continued working in his laboratory even long after I had gone to bed.

The next morning he was jubilant, although pale from lack of sleep.

"I have discovered," he informed me, "that wadsonium possesses a new and astounding quality which I had not previously suspected. I suppose you know that the electrical resistance of selenium varies as the intensity of the light falling on its surface increases or diminishes. This property has been put to various uses in a limited way such as turning on lights automatically when night falls and so on. Now the electrical resistance of wadsonium is also variable, and quite by accident I found that it depends, like selenium, on the influence of electro-magnetic waves; but these waves, instead of being of such an extreme shortness as those of light, are between one and four meters long. Don't you see the significance of that?"

I hesitated.

"I wonder if it mightn't be applied to radio in some way. I understand they have been doing quite a lot of experimenting in short wave transmission recently." I looked inquiringly at Wadson.

"That's just the idea. You see, I plan to have a wadsonium cell in series with the incoming tuned signal. The ability of the cell to conduct electricity will vary with the strength of the radio wave. The rest is obvious."

"But that is practically what happens in a regular radio tube. A very slight change in the minus potential of the grid produces a great alteration in the plate voltage. While the principle is different, the general effect is the same. I fail to see how your cell is going to revolutionize the radio industry."

"You are forgetting," said Watson, "the superior sensitivity of my device. The vacuum tube is really a crude affair. The necessity of using a heated filament to provide the electron stream imposes a good deal of complication. Some radioactive substance such as radium might take the place of the filament as the *beta* emanations are really a flow of electrons. They could be separated from the other rays by magnets. However, an arrangement of this kind would certainly increase the cost and for that reason would not be very practicable. But I think you will find that the wadsonium cell will be much superior to the ordinary tube." Then he went to his laboratory where he had spent nearly all his time since the fall of the meteor.

IT was on the following day that the first wadsonium cell made its appearance. After a solitary morning walk I visited my friend in the laboratory to see what progress he had made. He was bending over something on a bench which absorbed all his attention. I called but he did not seem to hear me. Then I noticed that he was wearing a pair of headphones. As I went over to him he

removed them while he made some adjustments on his instrument.

"Well," I said, "what's new?"

Wadson held up the object on which he had been working.

"Here," he said, "is a wadsonium cell." It was in the form of a glass tube about six inches long and two inches in diameter. The top had been drawn out to a point and sealed off while the bottom was tapered so that it would just fit the UX radio tube base to which it was attached. Supported in the inside was a thin sheet of a metal which I took to be wadsonium.

"Is there a vacuum inside?" I asked.

"No, just nitrogen. That is because I found out that the film of the oxide which forms in the air has in some way a harmful effect on its sensitivity. It was easier to fill it with nitrogen at atmospheric pressure than to go to the trouble of exhausting the air from within. As you can see, there are four terminals. Two of these are connected to the incoming signal while the other two are connected in series with a "B" battery and some sort of cone or loud-speaker. It happens that in addition to my twelve tube set, there is a smaller one which I brought along just for short-wave work. With a few changes I believe it will suit our purpose exactly."

In less than half an hour Wadson had made the necessary arrangements and we were ready to test his new tube. The set was specially designed to operate at a range of one, two, and five and a half meters which included those lengths influencing the wadsonium cell.

It was not without a certain excitement that I gazed at the cone speaker which had been connected to the set. My friend turned the dial beginning at four meters, and gradually going down. At first there was nothing but a low humming sound. I asked Wadson what caused it, and he began to say something about induced currents in the cell when the monotonous drone was suddenly broken by a sharp, irregular crackling.

"Static," said Wadson.

He turned to a lower wavelength. Nothing. Again he twisted the dial. Still nothing. By this time he was down to two and a quarter meters.

"You see," was his comment, "there are very few transmitting sets working on such very short wavelengths. Possibly one or two radio enthusiasts are trying it for the sake of the novelty. Of course, if wadsonium is ever found in sufficiently large quantities, and if wadsonium cells become popular, then all of the present broadcasting systems will be forced to change to shorter wavelengths. In previous experiments I found that it is possible to differentiate between two signals artificially produced in the laboratory when their wavelengths are very close together, thanks to the wadsonium cell. Therefore, there will be little fear of interference, such as might be expected, if all transmitting sets were to be limited to a range of three and a half meters. I have succeeded in completely separating two signals when the difference between their wavelengths was less than one-seven-hundredth of a meter and I have no doubt that by the aid of new improvements I may do better yet. Well, I don't think there is much use in going down any more until we build a transmitting set which will work at such low wave lengths."

"By the way," I said, "while we are on the subject of radio, I have been hearing so much about the chance of receiving a message from Mars which is supposed, by some people, to be inhabited by intelligent beings. Do you think there is the least likelihood of this occurring?"

Wadson smiled.

"I see you have been reading the Sunday supplements in the newspapers. As a matter of fact, recent evidence does not seem to confirm the earlier views as to the possibility of the planets being inhabited by intelligent, reasoning beings. What is more, any radio signals they might send us would most probably be unable to penetrate the Heavyside layer unless they were of an exceedingly short wave length."

"Your last objection would be admirably answered by the special qualities of the wadsonium cell."

"That's right," said Wadson, "all we need now is a radio operator on Mars. Well, it's getting late now. Perhaps we had better go to bed."

I fell asleep almost immediately and it seemed only a few minutes later that I was awakened by Wadson. As I turned sleepily around I could see that he carried a flashlight in his hand.

"Bill," he whispered, "I think I heard voices in the lab. There must be burglars there and I hate to think of my precious wadsonium cell being ruined by some careless crook. Here, take this." And he slipped an automatic into my hand.

Together we stole silently down to his laboratory. Unmistakably there were sounds of voices or rather of a voice. It was an unusually high-pitched tone for the proverbially stealthy thief. The language was unfamiliar.

We tiptoed into the laboratory through a side door. It was dark. I drew the pistol and Wadson held his torch in readiness. Suddenly he snapped on the light and the brilliant beam darted around the room.

"Hands up!" I shouted. Nothing happened and the voice continued to prattle away. Wadson switched on the room light, but we saw no one. It was only then that I realized the source of the sound.

"The radio!" We stared at each other for a moment and began to laugh.

"Well, Bill," said Wadson, "that's one on me. I must have left the switch on by mistake. But I would like to know where that voice comes from. I certainly never heard that language before. It might be wise to take an impression of it. I have some of those repeat-a-voice phonograph records with which you can do your own recording. In that way we can get an accurate copy of the rest of the speech." In a surprisingly short time we had the phonograph with the blank records taking down the talk. About an hour and a half later the voice stopped.

THE next day we drove into town with the records and submitted them to the inspection of a friend of Wadson's who studied languages as a hobby. He had mastered no fewer than forty-three different tongues and dialects so we had no doubt that he could enlighten us as to the philological classification of our strange specimen. But he was as baffled as we were. However, he was very much interested when we told him the whole story and he promised to come to the laboratory that night to listen to our mystifying speaker should he talk again. Before returning, Wadson bought a liberal supply of the blank disks to enable us to record whatever might be said.

Wadson's friend came up at eight o'clock and was led at once to the laboratory. The voice started very much earlier than on the preceding night. At a quarter of nine a low musical note issued from the cone as though

a piano key had been gently struck. After an interval of five minutes the mysterious voice spoke again. The tone was rich and clear and the speaker uttered his words evenly without any trace of emotion. We had the phonograph taking down an entire impression of the message. The philologist listened with the deepest attention.

After an hour he suddenly turned to us and said:

"It seems to me that I have heard this before. Yes, I am sure now. The person delivering it evidently considers it of importance, repeating the same speech every night. This thing has me puzzled, I'm afraid, for I cannot reconcile these words with any language I have ever heard. If you don't mind, I would like to have a complete impression. There is a certain Professor Harold Rice of Oxford, who is spending his summer near here. As his field is the Science of Languages, I am sure he will be able to give us a clue to the identity of Mr. X, if I may so call our unknown lecturer."

Wadson readily assented. Accordingly the records were placed in the hands of Professor Rice who promised to give us his expert opinion within a few days.

A week later, when my friend and I were absorbed in the intricacies of a chess game, we received a visit from the philologist accompanied by Professor Rice. Both of them seemed to be keyed up to a high pitch of excitement.

"Wadson," said the former, "the thing's stupendous. After puzzling over the records for almost a week, Professor Rice was unable to find any corresponding known language. In short, he was forced to conclude that the sounds originated in another planet."

Wadson nearly jumped from his chair.

"What?" he cried.

"That's right. I was surprised, too, but there's no other way of explaining it unless we are going to suppose that we have been the victims of an elaborate practical joke which seems hardly likely. You're going to be famous now, old man, whether you like it or not. The Professor will tell you how he was led to this conviction."

"It really wasn't very difficult. The use of the radio clearly indicated that the sender must belong to a highly progressive race. This at once removed the necessity of considering the hundreds of dialects in use by the various savage tribes and thus considerably narrowed my search. I was unable to find any tongue, even remotely corresponding. Of course you may argue that this language may be a secret one, in use by some society or other. But then why should such a group go to the trouble of learning a whole new language, when a simple code would suffice for transmitting radio messages not intended for outside ears. Then, knowing the gigantic power of your radio set, I thought it very likely that the sender was the inhabitant of another planet."

My mind was in a whirl. So my chance remark to Wadson a few evenings back had some foundation after all.

"I think it would be very interesting to try to decipher this message. You know, it may be of importance. Don't you think so, Professor?" Then I suddenly realized that the philologist had just been speaking.

"Oh, beyond a doubt. It ought not to be so very hard. We have material enough to work with. It will be an enjoyable way of spending the vacation. Come to my house tomorrow morning, and we can make arrangements. Mr. Wadson, until we translate this speech I would not advise you to encourage anyone else to listen to our planetary communicator."

"A little professional jealousy," I thought. "He is afraid someone else may succeed in deciphering it before he does."

As it was late our guests departed.

"Wadson," I said as soon as we were alone, "I never suspected that one wadsonium cell was so powerful. At the time when you first tried to use it, you only expected to receive terrestrial signals, and yet the message we heard must have come from a point many million miles away at least. The wadsonium must be thousands of times more sensitive than we ever supposed."

"Yes, I thought of that, too," said Wadson. "The metal may be under some external influence. We might go over and investigate." We did, but at a first glance there was nothing out of ordinary that we could see. Then at my suggestion Wadson closed the switch and, as we had not changed the dial setting, the unknown voice instantly projected itself into the room. My sleeve accidentally knocked over the cone speaker. The flow of words suddenly stopped.

"What's that? I must have pulled out the connecting cord."

"No," said Wadson, "you didn't. Something else went wrong." With those words he picked up the cone and replaced it in its original position near the radio. To our immense surprise the strange voice suddenly resumed its tireless monotone. Wadson laughed a little.

"I see it now. It is the action of the magnet in the speaker on the wadsonium, I'm pretty sure." He picked up a big horse shoe magnet and held it near the wadsonium cell. The increase of sound was marked.

"I never suspected anything like that before," he exclaimed. "This wadsonium is full of tricks. At any rate, it opens a new field for investigation." As if to prove his last words, Wadson took off his coat and at once proceeded to test this new physical property of the metal with what materials he had. The net result of all his experimentation was that the extent to which the wadsonium was affected was inversely proportionate to the square of the distance between it and the magnet.

EIGHT days later we were the recipients of another visit from the philologist and Professor Rice. After many long hours of intensive work they had succeeded in almost completely translating the message.

When I try to describe the excitement at this point, words fail me. The whole thing was tremendous. The subsequent shock produced when this veritable bombshell was thrown into the civilized world is well within the memory of most of us. Wadson's laboratory at once became a Mecca. Had he wished, he could have sold his wadsonium at the time for over $15,000 per milligram, but he generously gave all but a small specimen to the Bureau of Standards where its various properties astonished the staff. At the present time, however, it has been ascertained that considerable amounts of this metal are to be found in the earth, in some places, at a distance of less than four miles below the surface. Plans for its recovery are now under way.

All of this was secondary to the worldwide interest which was created when the translated message was made public. The planet from which it was sent, far from being Mars as I had at first suspected, was proven to be a satellite of one of the remoter stars of the Milky Way, whose distance from the earth is only to be expressed in thousands of light years. This last fact is significant, for it means that all of the events described took place

many centuries ago and the voice we heard speaking belonged to a person, dead since the time of the Pharaohs. When the faintness that a radio signal must possess after traversing that great void of space is considered, we can only wonder the more at the extreme sensitivity of the wadsonium.

The translation of the Message from Space which follows is undoubtedly of great importance. It suggests new and terrible methods of warfare whose almost unlimited destructive potentialities would be an answerable argument for World Peace. It brings to mind the possibility of finding on other planets than our own advanced forms of life, with which we may some day hope to communicate. But it has always seemed to me that the most important angle from which to view our interstellar message is that from which the sender considered it when he transmitted it, namely as a warning. His constant repetition of the whole speech would alone be a sufficient mark of the extreme gravity of the situation presented in it.

However, I will not venture any more private opinions on the subject, but I will leave the reader to form his own ideas after his perusal of the Message from Space.

TRANSLATOR'S NOTE

While reading the following it should be kept in mind that many of the words have been found to have no earthly parallel and in these cases the translator has been forced to rely on his imagination. However, as most of them are of a technical nature the reader should experience no difficulty in keeping track of the story. The translation is necessarily a free one and certain idiomatic expressions have been replaced by the corresponding English phrases.

The Message from Space

I, PRIXTON LESTEX of Astrax, am the last living representative of my civilization. The following history is intended primarily as a warning—a warning to every planet in the universe on which exists civilization. And for this reason it will be repeated twenty-five times at intervals of one day. Every civilized nation which this message may reach is cautioned to be on its guard against planetary invasion from the inhabitants of a dark star which is at a distance from us of 170,000,000 *sortors.**

Before relating the events connected with the conquest of Astrax, it would be advisable to give some small account of the state of our civilization at the time of its downfall, so you may better understand the existing conditions.

From the earliest historical times, the most important subject of our intellectual pursuit has always been science. As a result we had developed into a race of savants with but one aim in life—the perfecting of Astrakian civilization through the advancement of science. Countless years ago we had tapped the wells of molecular energy. This proved insufficient to satisfy our demands. Atomic energy was released long afterwards by whose aid we performed mighty engineering feats which would have seemed impossible before. The whole surface of Astrax was practically made into one huge city whose spires rose hundreds of feet into the sky. Giant air liners plowed the upper layers of the atmosphere, loaded with freight and passengers. With our atomic energy we were able to build great space-fliers with which we colonized several neighboring planets. Down below, at the lowest levels of the city, dwelt the scientists upon whose labor rested the mighty structure of our civilization. Our government was simple. A Planet Ruler was selected at regular intervals of five years by a council of one hundred who also acted as an advisory committee. Its decision was final.

At the time of the invasion I was a sub-inspector of the landing stages for the interplanetary vehicles. This position kept me constantly upon the upper level of the city. My work was most important although easy. Each day I personally examined each of the stages in my division. This meant that I had to make sure that the entire surface was free from any obstruction, which might injure a flier on impact, and that the crew whose duty it was to take charge of the ships on their arrival was alert and ready.

The mechanism of these space vehicles was not at all complicated. A method had been perfected for increasing the power of magnetic attraction to an unprecedented degree. The power of repulsion between like poles had been similarly developed. Beneath the lowest levels of Astrax a great magnet of gigantic power had been placed. Since our scientists had found a way of concentrating the magnetic forces of attraction and repulsion to the form of a ray, it was a simple matter to equip space ships with such rays. One of these corresponded to one pole of the magnet and the other to the other pole. When the flier was navigated, the magnet formed the base of a huge triangle of which the flier was the vortex. The ship could be moved in any direction whatever by suitable adjustment of the rays. It may interest any scientist who is hearing this account that the experiments first made were based on the principle which states that whenever a force is applied in one direction, there results an equal force exerted in the opposite direction.* The force used was an explosion. Small parcels of explosive compounds were placed at various points about the surface of the vehicle. The detonation of any of these would cause the flier to move in the direction opposite to that in which the explosion was applied. Unfortunately, the resulting gases, due to the intense cold of interstellar space, first liquefied and then froze solid, clogging up the explosion chamber. This necessitated a system of artificial heating which proved unsatisfactory. Hence the adoption of the later method.

The fliers were in the form of long cylinders with hemispherical ends. One ray machine was placed at each extremity but both were controlled from a single cabin at the front. There is little to be said about the further details of their construction, except that they included every convenience for the benefit of the occupants. On their arrival from a voyage they would maneuver so as to gain a position directly above their respective landing stages. Then, slowly shutting off the repulsion rays, they would sink to the surface permitting those within to emerge. As the outer envelope was a vacuum between two layers of a special material, it can readily be seen why it was so important that the landing stages be kept free from any obstruction.

It was a magnificent sight, especially in darkness, to see those giant fliers dart in from distant planets many *sortors* away, then suddenly swoop down to the landing stages and finally settle down to rest, while their lights,

*Translator's Note. The word *sortor* evades translation but it would seem to correspond to our terrestrial term, light year. The light year of Astrax would, of course, have a different value from our own.

*Note. This corresponds to Newton's third law of motion. The famous Goddard rocket, working on this principle, had once been suggested as a means of planetary navigation.—G. H. WADSON.

gleaming in the darkness, cast weird shadows over the whole scene.

THE first warning of the invasion came one night when it was my duty to report to my superior, the Superintendent Inspector of the Associated Interplanetary Landing Stages of Astrax, to quote his full official title. His name was Plutor Omnex AQ5X, which latter symbol denoted his rank. He was much perturbed over something, although I did not dare to ask him what was wrong. On his desk was a chart which automatically recorded the positions of each of the space fliers in service at the moment. For a while I stood in silence while he studied the object before him.

"Prixton Lestex AP3D," he said, addressing me by my full name, "what is your report of the condition of the landing stages of top level 885, section QR97, division XJ3486?" He invariably used this complete formula, although he had known me personally for a long time.

"Everything is functioning satisfactorily, sir," was my reply.

"Hum, I'm glad *you* at least can say so." With this enigmatic remark he abruptly stopped the conversation and bent again over the object on his desk. Thinking that he wished to be alone, I turned to the door.

"Just a moment, Lestex, I may wish to speak to you in a short time concerning some important matters." I returned to my former position before his desk and waited respectfully until he was ready to address me. For a time he did nothing but gaze intently at his chart, checking the various positions of the space fliers by means of a table which he kept constantly on hand. Beyond a doubt, he was greatly worried for, after muttering to himself a while, he turned to a visiphone which recorded the image of the party at the other end.

"Section QG32, division KM2937," he called into the instrument. In a moment the face of the official in charge of the indicated division appeared in a small disk mounted on top of the phone.

"Mentel Prolack AD8C," said the Superintendent Inspector, "you will have a fast inspection flier ready for use at once with a crew of three. Include a Wexton ray machine."

"Yes, sir," said Mentel Prolack, "I will see to it immediately."

I may here explain that the ray machine named was the invention of Dolor Wexton, a scientist of the lower levels. A beam directed from such a machine had the property of disrupting the atoms of any matter with which it came in contact by balancing the electric charges of the outer electrons. The only substance immune was hydrogen, which necessitated that the part of the machine from which the ray was projected be made of this gas in solid form. In practice it was not constructed until the machine was beyond the atmosphere of Astrax where the cold of space kept it below the freezing point of hydrogen.

Plutor Omnex then turned his attention to me.

"Prixton Lestex, I am about to entrust you with a grave mission. I have found you loyal and intelligent and therefore I have no doubt that you will bend every effort towards making it a complete success. Now come here," he said as he indicated a place at his side. I walked over to his desk and looked at the chart which he had been examining. The principle was simple. Each flier was represented by a tiny dot of light which moved at a rate proportionate to that of the machine it indicated. The chart was divided by a system of crossing lines. These corresponded to imaginary lines in space by which the position of any ship could readily be determined.

"This," said Plutor Omnex while pointing to one of the bright specks, is passenger ship #A38B36 which is bound for our most distant planetary possession. Now read what its position should be from the table. I looked at the long columns of figures which indicated the exact position of a flier at any given instant.

"Space ship #A38B36, *extor* 216.45.72, *lextor* 45.-73.2."*

"All right, now look at the position on the chart."

"*Extor* 216.42.94, *lextor* 45.70.1."

"You see," said the Superintendent Inspector, "something is wrong. I tried to communicate with the pilot, but I could not get in touch with him. The magnet rays might have gotten out of order and that would explain the ship's being off the correct route. In my official capacity it is my duty to check up on the flier positions. If anything went wrong I would get the blame for it. This is the first time that the chart did not exactly correspond to the table. I should like to have this matter arranged without letting it get beyond my department. I have, as you will remember, ordered an inspection flier with a Wexton ray projector. These inspection ships, that is the newer models, have a speed of 8,000,000 *sortors* per day which is much faster than a standard flier. You will, therefore, present yourself to Mentel Prolack AD8C, section QG32, division KM2973 with a message which I will give you. He will put you in charge of the flier and supply a crew. It will be your duty to overtake space ship #A38B36 and find out what is wrong. The details will rest with you. If you encounter serious difficulties phone me at once. You may find the Wexton ray machine useful if you meet any Drulls. That is all." I saluted and left with the message in my hand.

The Drulls were the inhabitants of a nearby planet who had refused to adopt Astrakian civilization, but instead grew to be a warlike race. They had once succeeded in capturing one of our fliers. From it they learned the secrets of its construction which enabled them to build a fleet. Hence all small ships were equipped with Wexton rays for protection.

Mentel Prolack was busy when I arrived at his division, but, when I sent word that I had a message from the Suprintendent Inspector, I was immediately ushered into his presence.

"Where is the message?" he asked. I handed it to him and he read it carefully.

"Are you Prixton Lestex?" he inquired.

"Yes, I am."

"WVXM8662004," he said. To this I replied:

"4002668WVXM."

Mentel Prolack smiled.

"That's right. I see you know the pass-word. I suppose you understand your duties?"

"Perfectly."

"Fine. Here I have the flier all ready for use with a crew and Wexton ray machine. You are to start at once. Goodby." He indicated the inspection ship, which I entered immediately. There was a crew of three within in addition to the operator of the ray machine. In a few moments I made the acquaintance of each of them. Joll Randor R27G4 was the pilot, Raim Kortock C63Y7 and Mexter Brellton C82B5 were mechanics whose duty it was to see that the magnetic rays were always in per-

*Note. *Extor* and *lextor* probably correspond to something like right ascension and declination.—G. H. Watson.

fect order. Clenton Stretor R91B7 was in charge of the ray machine.

I slid the door shut and in a moment the ship was on its way. Since it was equipped with an automatic chart such as the one I have already described, it was a simple matter to follow accurately the movements of the ship we were pursuing. Constant reference to a table convinced me that space ship #A38B36 was following an erratic course. Day after day we sped on, always reducing the distance between the two dots of light on the chart which represented the flier we were to overtake and our own. Joll Randor was a most excellent pilot. It so happened that just at this time a giant swarm of meteors had crossed the orbit of Astrax so we were constantly menaced by a collision with one of these bodies, but Randor's skill always evaded the danger.

ON the third day I was awakened from a sound sleep by Clenton Stretor.

"I am sorry to have disturbed you, sir, but I am afraid that there is a fleet of Drull fliers about 21,000 *lentors* (miles?) ahead. I don't think we can escape them for they are surrounding us on all sides." This news annoyed me very much. Personally I would not have minded a fight with the savage Drulls, but the success of the expedition was of supreme importance.

"Tell Joll Randor to put on full speed and try to break through their lines. Be ready with the ray machine in case he doesn't succeed."

"Very well, sir." Stretor saluted and was gone. In the meantime I reviewed the situation. Here we were surrounded by the Drulls who would hardly let us off without a battle. But I had orders from the Superintendent Inspector which admitted of no delay, so it would be impossible to turn back. We must go on. We were equipped with a ray machine, it was true, but on the other hand, the Drulls had perfected an instrument, which projected a beam capable of raising the temperature of our flier to the boiling point almost instantly by exciting the molecular motion of its component substances. However, in spite of this we must go through.

By this time I could clearly see the enemy fliers in the distance with the aid of a telescope. Now the Drulls were only 8,000 *lentors* away and we were approaching them every instant. At this stage of my reflections, there came a knock at the door and Stretor entered.

"Sir, it will be impossible to pass them. The only way to avoid a fight is to retreat." At this last word I shook my head decisively.

"No, Stretor, I'm not turning back. It will be up to you to clear a path through the enemy for us."

"I'll do my best, sir, but if one of their heat rays gets us we are done for."

"All right. You had better go and tell the others to be ready for action." I looked again in the direction of the Drulls through one of the windows and estimated their distance at about 350 *lentors*. Already I could see them darting their terrible heat rays, but since they were only efficient at short distances we had nothing to fear from them as yet.

I went down to the control room where the Wexton ray machine was situated. Stretor was bending over the apparatus making some final adjustments. The pilot was standing next to the instrument board by which the movements of the flier were controlled.

"Randor," I said, "I think it might be wise to adopt a zigzag course. It might help us to escape their heat rays, although it will make it harder for Stretor to use his machine."

"That's all right, sir," said Stretor, "I'll manage without any difficulty. Our escape is of more importance than a possible victory." Accordingly Randor made certain motions and I felt the flier sway to and fro as it darted about in various positions. While it did enable us to elude their heat rays, nevertheless they kept us constantly under the glare of the powerful searchlights with which their space ships were equipped. Since our exact position was always known, they could begin to close in on us and I saw that a time would come when we would no longer be able to dodge their rays. I signaled to Stretor to begin projecting the Wexton ray before our foes got too close. It was well that I did so, for already the flashes of their offensive weapons were coming uncomfortably near. After a few moments we had the satisfaction of seeing one of the enemy fleet suddenly begin to glow violently and then completely crumple up. This opened a gap in the surrounding line through which Randor attempted to lead our flier. Unfortunately he was a moment too late for another Drull ship rushed in to take the place of the one destroyed at the exact time we were passing through the opening. There was a terrific crash in which we were all thrown to the floor. When we rose, the ship with which we had collided was gone. We were through the gap and safe. No, not entirely safe for Stretor had found that the hydrogen attachment of the ray projector had been broken off and at the moment repairs were impossible since there was no more of this substance in the ship. Therefore we raced onward as fast as the flier could carry us. For a while the Drulls followed us closely, continually flashing their heat rays. But they missed us each time and gradually we drew away from our enemies, leaving them far behind.

I examined the space chart and found that the object of our pursuit was only 45,000 *lentors* away, so we were able to slow up our mad rush and thus gain an opportunity to inspect any damage that we might have suffered during our fight with the Drulls. I was relieved to find that nothing was broken or injured, with the exception of the hydrogen ray projector. Since I expected to obtain more hydrogen from the space ship when we came up with it, this did not worry me greatly. Now we had only 32,000 *lentors* to go before we overtook the flier, so Randor again reduced the speed of our vehicle.

I made an effort to communicate with the ship ahead of us, but was unable to receive any response. For a moment the possibility flashed across my mind that the crew might be dead, but then I remembered that the automatic controls would have kept the flier to its course in event of such a mishap, and as the pilot room was securely locked on all of these big ships, none of the passengers could have interfered with them. But the flier was clearly off her normal course and the deviation was continually increasing at such a regular rate as to make it appear the work of some intelligent agency. Meanwhile we had drawn so close to the space ship that it was only a matter of moments until we would be alongside of it. We were just about 137 *lentors* behind when Randor turned to me with an air of bewilderment.

"Sir, our flier does not respond properly to the controls."

"Are you sure?" I asked.

"Yes, it would seem as if someone has cut down

on the power of the magnet ray. If I may venture to suggest it, I would advise that you try to get in touch with Astrax and call for an emergency ship as the controls are getting harder to manage every moment."

I went to the sound-proof phone booth and lifted the instrument from the table on which it was resting and pressed a small lever. There was no response. The indicator light which glowed when the phone was ready for use was not lit. I examined the instrument very carefully and at last came to the conclusion not only had the magnet rays been weakened, but the electric power impulses which were transmitted to us from Astrax had been also tampered with.

I went back to the control room.

"Randor, it seems that you're right. The space phone doesn't work although it's in perfect condition. There doesn't appear to be any power being transmitted from Astrax. What is the course?"

"We are moving parallel to the ship ahead of us although at a greater speed and I can't do anything to change our direction. There is no doubt that our flier is being guided by some power beyond our control. And now, in addition to the magnet rays failing to function, the power impulses are ceasing to reach us, and we are altogether cut off from our planet. I can't say that the prospects for the immediate future are particularly alluring."

"In that case, there is nothing we can do about it so we may as well take a rest. Then we will be in better condition for whatever happens next." Before I lay down I walked over to the space chart to ascertain the position of the flier ahead of us. I was rather startled to find that it was now only 17 *lentors* away, although an inspection of the respective motions of the two ships confirmed Randor's assertion that they were traveling in parallel courses. Then I sank down and fell asleep. How long I slept I have no idea, but judging from the distance covered during that period the time must have been considerable.

THEN, jarring my sleeping brain, came a loud, impatient clanging of the space phone bell, while the indicator light continually flashed on and off, showing that someone was at the other end of the line. My first thought was that the power impulses had resumed operation and that the call was either from Astrax or from the ship ahead of us.

"This is Prixton Lestex in charge of inspection flier #X65U39. Who is speaking?"

The voice that answered aroused within me the most vivid sensations of fear of, and hatred for, the owner. Even with the first two words I was sure that those hard, metallic accents did not belong to an inhabitant of my planet. The subsequent sentences confirmed this intuition.

"In order to avoid any future misunderstandings," the voice began, "I might as well begin by telling you that your space ship and the one you are following are now under the power of a controlling agency completely foreign to your civilization. The world from which I come is even far beyond the distant planet which the flier you are pursuing had as its objective. In short, I am an inhabitant of a dark star which is about 170,000,000 *sortors* from your Astrax. My race comprises what are known as the Super-Intelligences of Extrose. I suppose you need hardly be informed that you, and those with you, are now our prisoners. Your progress is now being accelerated by certain means at our disposal and the course you are following will shortly lead you to my planet where everything will be made clear including the reasons for your capture. Goodby." With that the voice suddenly stopped. I was furious. The idea of being captured in this outrageous fashion by a race of whom I had never heard, without a chance to do anything about it! At once I called in all the rest of those on the flier and acquainted them with the communication I had just received. To give the inhabitants of Extrose full credit their science must be of an unusually high order to enable them to get in touch with us so readily and at the same time to be informed of events occurring millions of *sortors* away, I thought. And then, in addition, to know our language. . . .

It is needless to give an account of the succeeding days which passed until we reached the planet Extrose. It was a repetition of what has just been recounted, alternate speculation and damnation regarding the Super-Intelligences of Extrose. On the twenty-first day of space flying we were aware of a sudden increase in the speed of our vehicle. We looked out of a window and were astonished to find that the customary pin points of stars had vanished. More careful observation showed the whole sky swallowed up in a huge, black bowl. This I correctly supposed to be the dark sun Extrose. I hastily consulted the space chart and was relieved to find that the other flier was still in its relative position.

Then our sudden acceleration began to decrease as we were gently drawn down to the surface of Extrose. From a nearer position I could see that portions of the blackness beneath us were illumined with a dull radiance, which became visible only at a close range. These areas of light were roughly circular in shape and, as our ship approached one of them, they proved to be the openings of great shafts, which apparently went far below the surface. At this point the bell summoned me to the space phone and the strange voice again began to speak:

"These deep shafts which you see extend almost one-quarter of the length of the diameter of Extrose and then open into our cities, which are far below the surface. They are so situated because most of the atmosphere has gravitated toward the center, as this planet is pierced through and through with deep, cavernous pits which occupy a considerable amount of the total volume. Thus we were compelled to follow the atmosphere as it gradually left the surface to move in toward the interior. You will not be able to leave your ship until you reach the bottom of the shaft which you are now descending. There is nothing you can do but to wait till you arrive. When you do arrive, I will send further instructions."

Immediately I told the crew of this incredible message. A whole civilization buried hundreds of *lentors* below the surface of a planet! But that time our own affairs were of more direct interest to us. On looking through one of the side windows, I could easily see that we were rapidly falling down the great shaft just as the voice had said. A glance at the space chart showed me that now the other flier was only three *lentors* ahead of us. At least it was some consolation to know that friends were so near.

The descent through the shaft continued for some time, and while we waited for it to cease there was a great deal of discussion and speculation concerning the purposes of the Super-Intelligences of Extrose in capturing two Astrakian fliers. Randor thought it might be

some sort of a hoax, but I was not of this opinion. It all seemed very much in earnest. With this idea in mind, I carefully enjoined the crew to show no signs of hostility when we arrived at the city. Force could be of no avail in the very stronghold of the enemy. Only by gaining their confidence and trust could we hope to improve our situation. To this they all agreed. Again I looked through the windows, only to perceive that we were still traveling down that seemingly interminable shaft. However, through the bottom window I could see a faint glow, and then I knew that the city was close at hand. In a shorter time than I had expected the ship came to a sudden halt, and I saw that we had landed on a great platform surrounded by rows of powerful lights. The other flier was so close that I was about to leave our vehicle and run over to it when I heard the bell ring again, calling me to the phone.

"You are warned," the voice began, "not to leave the flier, under any circumstances whatsoever, until given permission by me. An infringement of this command will invite severe punishment. You may, however, watch subsequent proceedings through a window. They will concern the other flier which came with you." As before I informed the crew of what I had just heard. Then we all went to a side window which faced the other space ship. For a while the platform was vacant except for the two fliers. Then, for the first time, I saw an Extrosian. I thought I was prepared for any sort of strange creature which might appear, but the thing that finally came up on the platform left me breathless in amazement.

IMAGINE, if you can, a small, green sphere glowing with a peculiar phosphorescent gleam and propelling itself by darting slender purple rays from various points on its surface. The Super-Intelligence slowly moved towards the other flier and halted a short distance from the door. For a moment nothing happened. Suddenly a small, red disk of light appeared upon the top of the sphere. Somehow I felt that it was concentrating all the power of its mighty brain upon the occupants of the space ship. So great was the intellectual power of the Extrosian that even I, although not the intended recipient of its mental communication, could sense the command which it wished to convey. Those within the flier were ordered to leave it and to come down to the platform. The door opened and one by one they came out and climbed down. I recognized none of them, since their flier did not use any of the landing stages in my division. As they left the shelter of the ship they suffered no ill effects. From this I gathered that the atmosphere and the gravitation of Extrose were very similar to those of Astrax. Then the pilot of the flier and the Extrosian carried on a mental conversation. By this I mean that the intellectual capacity of the Green Sphere was so great that it was able to read the thoughts of the Astrakian even before they were translated into speech. On the other hand, the ideas of the Super-Intelligence were so forcibly transmitted that, even to the comparatively dull mind of the pilot, they were clear without being orally expressed. Of course I could not read the thoughts of the pilot, but those of the Super-Intelligence were obvious and, therefore, I can only give a one-sided conversation.

"Dumnos Veltran, pilot of space ship #A38B36," began the Extrosian, "as I have previously explained, you have been made a prisoner, along with those with you, of the Super-Intelligences of Extrose. I did not, at the time, make the reason very clear. Now I will proceed to do so." From this preliminary speech I knew that those in the other flier had received the same messages from the Extrosians that we had. At once I was all attention, for now I was to know the answer to many perplexing questions that had always been troubling me ever since the beginning of this strange adventure. I cast a hasty glance around my ship and observed that the crew was no less interested in the proceedings than I.

"Our whole purpose in bringing you here," resumed the Green Globe, "was to ascertain whether you would be able to survive the Extrosian conditions of temperature, atmosphere, and gravitation. Although, as you can readily see, the experiment has been an unqualified success, its object must still be a mystery to you. We on Extrose have always been a . . . What! Do you dare to interrupt me to say that you object to your detention? Do you think I brought you here because I thought you would like it?" It was plain that the pilot must have been mentally protesting about his capture so vividly that the Extrosian had lost patience with him. However, he decided, at last to continue his explanation, rather than permit his anger to overmaster him.

"We on Extrose have always been a most adventurous race, although you might not draw this conclusion from a cursory glance at our seemingly ineffectual bodies, these globe-like objects. We have certain mechanical extensions which enable us to do many things which would be beyond the power of an intelligent sphere. For example, we could convey to you *spoken* words over the space phone, although we are without speech organs. But more of that later. As a result we have made quite a number of planetary conquests, somewhat in the same way that you have done. However, nearly all of them have been very unsatisfactory. The atmospheres of the invaded planets were not like that of Extrose. We were forced to use certain arrangements for taking some Extrosian atmosphere along with us. For even an Extrosian needs air, as the cells of his tissues must be constantly bathed in this fluid. This unfortunate defect removed any prospect of their colonization. This has impelled us to capture you and your space ship, in addition to the other one which came with you. As you can apparently use our atmosphere without inconvenience, we will easily be able to adjust ourselves to yours. I understand that this short account will leave many things still unexplained. How did I bring your space ship here? How did I cut off its magnet rays? For the time being these questions will have to remain unanswered. Let it suffice to say that to a Super-Intelligence many things are possible that to an ordinary mind would seem incredible. Now that we have found that the conditions existing on your planet, which you call Astrax, are favorable to Extrosian life, we intend to take possession of it. After all, it is a case of the survival of the fittest. No doubt you wonder that I divulge all this so casually, but you must remember that your information will be of no avail, and even if you were to escape and warn your planet, it would not help in the slightest degree. That's all for the present." Then the thought impulses of the Green Sphere ceased and the red spot faded and vanished.

I was stunned when I realized the full import of the message of the Extrosian. There was absolutely nothing to be done about it. Escape was impossible. Even if we got through the shaft, they could easily draw us back as

they had done before. I surveyed the group on the platform. For a while they stood silent. Then suddenly Dumnos Veltran acted. With a cry of mingled rage and despair he hurled himself upon the Globe before him, forgetting that that powerful mind could easily read his thoughts and anticipate his actions. All those with him followed, and before I could say a word, the crew of my flier burst open the door and joined their countrymen. I alone stayed back, realizing the futility of such an attempt. The Sphere remained motionless until its attackers were almost upon it. Then the red spot sprang into life and the gleam on its surface pulsated and brightened. Instantly every Astrakian on the platform was stricken to a statue-like pose right in the middle of a movement and dropped to the floor. Then the Extrosian addressed itself to me.

"They are all dead, killed by the power of mental suggestion. I trust, for your own sake, that you will have the wisdom to venture no such attack yourself. The invasion of your planet will begin very soon. But now I must first acquaint the members of the Supreme Council of Extrose with the successful results of the experiment. I think you had better come with me, for if you are left alone you will probably get into trouble and complicate matters." At those words I left the flier and alighted on the surface of Extrose. As I have said, the atmosphere was almost exactly like that of Astrax, and I experienced no discomfort in that respect. There was a peculiar, pungent quality in the air which I later learned was due to the presence of a gas unknown on my planet. The Globe led me to a small chamber at the bottom of the platform, which we entered. I could see nothing but a large, gleaming square on one of the walls. My captor seemed to concentrate all the power of his mind on this object. The red disk glowed as before and soon a picture appeared on the square. I could discern a dimly lighted room in which were two long, shelf-like objects. On each of these was a row of Extrosians. I took this to be the Supreme Council which had been alluded to before. This room, too, had a square placed on one of the walls in which I could see the image of the chamber in which I was. One of the Globes at the extreme end of the row nearest the square rose from his place and moved over to it. At once the red spot which I knew so well began to gleam, and I surmised that the two Extrosians were having a mental conversation. But the thought waves used were so faint that I was unable to intercept them. It was soon over. The members of the Supreme Council seemed very well impressed with the news. Many of them, in their enthusiasm, started to move about the room on their purple rays. The red spots on their surfaces glowed as they carried on excited communications. Then the picture suddenly vanished. The Sphere began to transmit more mental impulses.

"You have seen how much the information was welcomed by the Council. I was told that the invasion of Astrax will commence as soon as all the Extrosians are acquainted with the plan and the space ships are made ready. This will not take very long. I am to be put in charge of the expedition and you are coming with me in the leading flier. It would be better for you to remain in your vehicle while I go to make arrangements."

FOR the first time I got an opportunity to mentally review the situation. Everything had happened so quickly and there had been such a sudden crowding of events that my mind was almost dazed. It was naturally impossible for me to entertain any feeling but hatred for the Extrosians. They killed my crew in cold blood and even now were preparing to take possession of my planet by force. And yet, at the same time, I realized that any form of emotion was foreign to them. Everything they did was the direct result of their adventurous spirit which knew no obstacle. My countrymen, so ruthlessly destroyed, had been regarded simply as annoyances. It was maddening to sit there quietly while knowing of the terrible, inevitable doom in store for my planet. That feeling of impotence was unbearable. The Extrosians were going to put me in the leading ship so that I could get a good view of the annihilation of the inhabitants of Astrax. Oh, the irony of fate! I was interrupted in the midst of my thoughts by the return of the Green Globe.

"I can see you are distressed over the disaster which your planet is going to experience so soon," it began. "Well, there's no use in worrying about the inevitable. Why don't you take a more rational view? After all, there is nothing you can do to avoid it, so you might as well make the best of things. You will probably become inured to Extrosian conditions so soon, while you are with us, that you will prefer to return to this planet. So far you have seen practically nothing of our scientific development. Compared to yours, it is marvelous." But I could not sympathize with this argument. Astrax was my home, the base of all my associations. Now it was to be destroyed and the civilization of which I had been so proud was near its end. But these points were beyond the comprehension of the Extrosian.

"We are going to leave very soon now, so I will take you over to the leading ship." I was led to the edge of the platform where the Globe rested his weight on a small button on the floor. Instantly a trapdoor swung open, revealing a long, sloping passage. As we followed this the door behind us closed automatically. The corridor was very much longer than I had thought and, although I walked as rapidly as I could, the Green Sphere was impatient at the rate of our progress. But, like everything else, the passage finally came to an end.

It opened into a vast plain, on which reposed many large, gray shapes. I presumed they were space fliers. The whole scene, at first sight, was one of extreme confusion. Countless numbers of the Green Spheres rushed hither and thither as though in ignorance of their destinations, but I knew that, underlying that seeming scramble, was a well-arranged and efficient system. My own experience on Astrax had taught me as much. Near each of the fliers were vast, complicated masses of machinery which were loading materials and supplies into them. My guide told me that these were operated by the concentration of the minds of certain Extrosians upon them. These machines were some of the "extensions" of which he had previously spoken. I was informed that no fewer than 160,000,000 Extrosians were going on the expedition. This huge number represented one-tenth of their entire population. They carried no lethal weapons, relying wholly on their power of mental suggestion which I had already seen in operation.

The following events may seem somewhat confused, I am afraid, but that is because in the sudden rush that succeeded I had no opportunity to get a clear impression of what was happening. I had a vague impression of my guide's calling me to the foremost flier, into which I blundered somehow, while hundreds of Green Globes crowded in on either side. A door clanged shut, and we were gone. I had a sensation of going straight up with

an inconceivable velocity. I knew we were ascending one of the shafts which led to the surface. Then I received a mental impulse from my guide, informing me that I would find him in the control room. I located this after considerable difficulty and thus escaped the bustle and turmoil without. Here I saw the Extrosian mentally controlling a small instrument which, he told me, regulated the speed as well as the direction of the space ship. I asked him to explain the means of propulsion, but this he refused to do, saying that it was a secret. However, I was forced to admire the skill and ease with which he piloted the flier. He informed me that its velocity was so great that we would arrive at Astrax in one-third the time it had taken me to cover that distance. The size of the vehicle was about four times that of our largest ships, and yet the Green Sphere told me that compared to the other Extrosian fliers it was very small indeed. By this time we were through the shaft and just above the surface of the dead star. (I should explain that Extrose is really a sun and not a dependent planet, but through habit I have occasionally referred to it by this latter term.) There was a window in one wall of the control cabin, and through it I could see a steady stream of lights pour through the shaft opening. When I realized that these lights denoted a mighty horde of Extrosian space ships, I knew that Astrax was hopelessly doomed. Then, for a while, I preferred not to think at all. Later I asked the Sphere whether it had a name.

"No," it explained, "we have no names. That silly custom died out millions of cycles* ago. Instead we have numbers. My number is 314-66874539. The first part denotes the rank and the second corresponds to the name. The lower a rank number is, the higher is the position indicated. I see that you have this rank system yourself. It is inevitable in a highly organized civilization. By the way, as you have been over this route before, can you tell me whether we may expect to encounter any unusual difficulties on the way? Ah, yes. I see you are thinking of the Drulls whom we may meet. Let me reassure you, when I tell you that they are so low mentally that it will only require about two or three degrees of mind concentration to annihilate them as fast as they come. To kill the Astrakians it took at least eight degrees. This is because a more advanced mind is able, to a certain extent, to withstand the thought waves which induce death by mental suggestion." This was new to me.

"Do you mean," I asked, "that you have gained such perfect control of your minds that you are able to regulate the exact strength of the thought impulses?" I could sense the mental amusement of the Extrosian.

"For the last 4,000,000 cycles we have been nothing but almost solely pure brains equipped with this ray-like means of propulsion which you have seen. Originally we had certain appendages with which we performed the majority of the necessary tasks. But we found that this distracted us from the pure mental labor, which everyone of my race likes to indulge in as much as possible. As a result of this condition we have built a great variety of machines, which are entirely controlled by the mental power of the operator. It was these machines that constructed the space fliers. By their aid our power is practically unlimited, and some day we intend to conquer as much of the universe as is conquerable. But I wander from the original point. You may readily see that since these machines left us free for purely mental activity, we began to develop our minds to an amazing degree. When we perfected our ability to project mental impulses, all conversations were confined to this method and consequently our speech organs atrophied. As a matter of fact, the only remnants of our original bodies which we have retained, besides our brains, are our eyes. And even these have changed. As we learned to depend on them more and more for maintaining contact with the outside world, they gradually grew, and now they include the entire surface of this sphere-like body. Thus you may regard the Extrosians as being gigantic eyes filled with brains. No doubt such a form of intelligence seems strange to you and probably repulsive also, but you must remember that every living thing is completely molded by the environment in which it exists. If you were to trace the circumstances and conditions surrounding our development, from the very earliest records of Extrosian life, you would readily perceive the reasons for our evolution in this direction." Then I thought of certain possibilities.

"With such an organism you should require no nourishment."

"Nor do we," replied the Globe. "That is one of the numerous advantages of being an Extrosian. And what is more, our life span has been so tremendously increased that 85,000 cycles is not an uncommon age among us. That is because there are no parts to wear out. But what does happen is this: You know that the brain is only capable of absorbing a certain amount of knowledge and ideas. In the case of such a race as your own where the lifetimes are so short, this fact is of no account, as you probably only use a small fraction of your total mental capacity. But with us it is different. After a very long time the brain becomes saturated and loses the power of recording any new impression. When this occurs the individual is no longer conscious of the present but of the past only. Originally, as such a one was of no use to the community, they used to be painlessly exterminated. But in the light of advanced science it became possible to make certain operations on them which destroyed all the less important impressions and thus partially rejuvenated the brain. Each Extrosian can survive about forty of these treatments which are undergone once every two thousand cycles. After the brain has taken more than forty treatments, it grows stale and becomes worn out. Then it is extinguished. I myself am comparatively young, for I have as yet only taken eight treatments."

"Perhaps you would like one?"

"No, thanks, I don't think I will need it for some time to come." Then for a while we conversed no more, and I again began to think of the terrible fate in store for my planet. It seemed to me that I had been taking the whole thing rather calmly, but, after all, what could I do about it? I would have given my life to warn Astrax of the coming danger, but how could I? There was not a movement I could make which the Green Sphere would not instantly anticipate. The only thing I could do would be to wait until Astrax was reached and then, at the moment of landing, attempt to escape. In the meantime I would try to be as friendly to the Extrosian as possible. Suddenly I remembered that even now he might be reading my thoughts, and I turned to look at him, but he was completely absorbed in controlling the flier.

Then I fell asleep and lost all track of time.

*Translator's Note. A "cycle" may be the Extrosian equivalent for a year. Prixton Lestex apparently was not interested enough to find what it corresponded to in his own language.

WHEN I awoke I found the Extrosian still in the same position. He had not moved since I had last seen him, and yet I was told that over one-half of the distance had been covered. I could not help thinking that it spoke well for the power of mental concentration which this race possesses. Through the front window I could see faint points of light far in the distance. Instinctively I knew these were Drull space ships. I informed the Extrosian of this.

"Yes," he answered, "they are Drull ships. I knew they were there a long time ago. As I explained before, we'll be able to subdue them by thought waves."

"That's all right, but they have a heat ray which could destroy this ship instantly. On the way here we were nearly victims of it ourselves."

"Don't worry. They'll never get a chance to use it. I will give a few orders and the Drulls will be done for." The Globe turned to a small, shiny square on one of the walls such as I had seen before, and the red spot on its surface glowed more vividly than ever. One by one each of the captains in charge of the space ships jumped into view, vanishing almost at once. Yet in that brief moment of their appearance the Extrosian had been able to give each of them an order. Then the sphere asked me to look through a rear window. I could see a long line of shining points of light, each of them representing a space flier. Gradually the line began to bend at the center, until it took the shape of a crescent, with our flier in advance at the center. From end to end the line could have been no less than 350 *lentors* in length. The Sphere informed me that the object of these tactics was to prevent any of the Drull ships from escaping for the line was to surround them, forming a circle. Now the enemy was only a thousand *lentors* away and they made ready to attack us. Even at that distance I could see their heat rays flashing, although they could not harm us while we were so far away. Each moment now the two fleets were coming closer and closer. Then the Globe went to the front window and the red spot glowed again. Suddenly the foremost of the Drull fliers began to wobble in its path and then dropped out of sight. Simultaneously almost all the other enemy ships followed suit. But even so a considerable number remained to endanger us with their heat rays. These came toward us at a high rate of speed. Just as I thought we were within reach of their rays, they too began to act erratically and plunged downwards after the rest of the fleet.

The Extrosian was elated over the overwhelming success of the battle.

"You see," he explained, "the whole thing was absurdly simple. I merely had to project my thought waves into the brains of the Drulls and thus command them to direct the ships' courses downwards before they died. This carried all of them out of the way, and it isn't likely that they will come back very soon. I had ordered all the other Extrosians in command of fliers to do the same."

"Have your thought waves any limiting range?"

"Of course the range varies with the mental power of the projectors, but the average is about twelve times that of the heat rays." I saw a new hope for my planet.

"Then I don't think your invading expedition will be very successful, as we have certain weapons which are efficient over distances many times greater than that. For example, we have an atomic disintegrator which would cause the atoms of this flier to collapse instantly and . . ."

"Yes," interrupted the Globe impatiently, "I know all about that. We Extrosians abandoned that device thousands of cycles ago. As a matter of fact, I read in your mind that the Astrakians have been making use of this instrument, and as a precaution I have ordered that all the fliers be covered with a film of solid hydrogen. They won't be able to attack us while we are in the air, and when we land there will not be any danger either. If they should use their rays, then they will wreck Astrax, so a victory would be too dearly bought." This brought home the realization of my planet's impending doom more forcibly than ever. What possible chance could it have against an invading army of Super-Intelligences whose giant intellects had foreseen every possible contingency? Then I determined to do something that, strangely enough, had never occurred to me before. I returned to the Extrosian and earnestly pled for my country. Since his position and rank were very high, I knew that if I could persuade him to abandon the invasion and go back to Extrose, his decision would not be contradicted. I told him of the beauties of my planet, of its highly organized civilization, of the scientists in the lower levels who ceaselessly toiled for the betterment of Astrax, of its airways and of its interplanetary transports. In short, of practically every development that my planet had produced. All in vain. The Sphere could see only from one viewpoint.

"Do you know, I think I shall lose patience with your continual mourning over the approaching end of your race. After all, what purpose is there in life but the advancement of science? Can't you understand that your boasted civilization is really of a decidedly low level anyway? You talk of the 'beauties of Astrax.' What good do 'beauties' do? Do they assist in the erection of laboratories or of scientific instruments and machines? No. They merely encourage indolence and vague dreaming. You say that your civilization has constantly devoted itself to the service and development of science. May I ask you what outstanding advances you have made in that line? The trouble is that you permit queer, sentimental ideas to interfere with your progress. When you should be delighted that your place on Astrax is going to be taken by a superior race of higher achievements, you bemoan the fact. Now is that a true, scientific spirit?"

I saw that it was more than useless to plead with this strange creature, who recognized not a single idea in life but the advancement of science and the urge of adventure. What could a rational being answer to an argument like that? And yet, after a little reflection, I could understand the reason for these perverted ideas. As a civilization of pure brains, they had practically nothing with which to concern themselves but intellectual labors. As a result every idea relating to personal pleasure or æsthetic appreciation of the beautiful had died a natural death. That was my way of accounting for the Globe's peculiar mental attitude.

After that I made no more allusions to the fate of my planet. At least I had done all I could and no more could be expected of me. I asked the Green Globe what would happen to me when everyone else on Astrax was disposed of. I learned that so long as I did not interfere with any of the subsequent Extrosian procedures nothing would be done to me. I could not help thinking that that sort of a life would be a lonely one—wandering through the levels of Astrax and reflecting on the life and activity which I had loved so well, now gone forever. I knew that I would never feel at home with the Extrosians.

"You will get used to it like everything else, as I told you before," the Globe told me. "But you never seem to realize that fact and I'm not going to drill it into your stubborn mind any more. Perhaps you will be interested to know that we have almost reached Astrax. It's that small disk of light you see through the front window. It is only 3,000,000 of your *lentors* away, and at our present rate it will not take very long to cover the distance." I felt a throb of emotion as I gazed on that bright, shining light which I knew was my home. . . .

THE flier was traveling so rapidly that the visible disk of Astrax began to enlarge appreciably each instant until it soon filled the entire heavens. Already I recognized the characteristic markings of those continents which faced me.

The Sphere decided that it would be better to try to effect a landing on the dark side of the planet, so accordingly the entire Extrosian fleet swung around in a large circle until it reached the other hemisphere of Astrax. However, the vigilant Astrakian fliers were on the lookout and immediately great signal flares were lighted all over the surface of the planet. At the same time a great horde of space ships rose from the ground as if by magic and began to ascend above the limits of the atmosphere to a point where they could operate their Wexton ray machines. The Extrosians, despite their superior intellects, had not anticipated this maneuver, and so were forced to flee from under the Astrakian fleet, which was out of the range of their thought rays. The Green Sphere decided on a route which led to one of the largest cities. The Extrosian fliers flew rapidly overhead and by projected thought impulses killed off nearly two-thirds of the population. This action was repeated again and again, and each time one of the major cities of Astrax was reduced to a metropolis peopled by corpses. Of course the inhabitants of each of the big cities had been ordered by the General Astrakian News Agency to leave, but their numbers were so great that the process of departure took considerable time, and this afforded the Extrosians an opportunity to catch up with them. Meanwhile the Astrakian fleet had overtaken us and was raining a perfect shower of the atomic rays, even at the risk of endangering their own cities. This menace grew to alarming proportions as more and more Astrakian fliers joined their comrades. The Green Globe then determined to attack the enemy on its own ground. So, instead of killing off the citizens below, it turned its attention to the fliers above. Soon the whole Extrosian fleet was high in the air, rapidly approaching the Astrakians. Already they had lost nearly sixty ships through the atomic ray machines while the Astrakian fleet was as yet intact. But now, when we were at close quarters, the Spheres had a chance to project their mental waves, and in a moment dozens and dozens of hostile space ships fell to sure destruction upon the surface of the planet, many *lentors* below. At this sudden reversal of conditions the Astrakians began to take alarm and accordingly all of them tried to flee from the range of the Extrosian thought rays. But this they were unable to do. The invading ships were very much faster and the Astrakian vehicles had not a chance of escaping them. Moreover, when they saw so many of their ships suddenly drop downwards, they lost their courage and even neglected to use the ray machines. Thus all of them fell victims to the Extrosians, and the Astrakian fleet was no more. We then dropped all the way to the surface and prepared to emerge. The Green Sphere informed me that he was not going to make any attempts to get into communication with the remaining inhabitants, as he was going to exterminate all of them anyway. His annihilation of their fleet had left no doubt of his intentions. We alighted near one of the large cities and all of the Extrosians left the ship. I begged to be permitted to remain behind, as I could not bear to be seen in the company of these invaders by any of my fellow creatures. For a while the Sphere seemed to hesitate when I requested this privilege, but he decided finally to leave me in the flier.

"But I warn you," he added, "not to leave. I am not even going to leave a guard, as you aren't worth the trouble. If you go away it will be your own fault if you get killed, since none of the other Extrosians know you." Then he was gone and all the rest of the Globes with him. For a long time I thought over the situation. Then, suddenly, I made up my mind and I acted at once. By a strange coincidence the city near which we had landed was the same one in which I had been engaged as Landing Stage Inspector, so I knew it thoroughly. I left the flier and ran as rapidly as I could to the city and there I mixed with the terrified mobs. I believe that of all the thousands there awaiting destruction, I was the only one with a set purpose in mind. I went to the nearest building and soon found my way to a shaft leading to the bottom levels. Down I went to level #1. Even here the place was deserted. Knowing their doom was at hand, the scientists who worked there preferred to die in the light of day rather than deep in the heart of the ground. As I went about I had been hastily gathering food, and by the time I reached my destination I was loaded with this necessity. At last I came to a small chamber which had formerly been a secret office of the Astrakian Space Ship Co. Under a cabinet at one side of the room was a small trapdoor of which I alone knew. I pulled a small, hidden lever and the door opened. I climbed down and pulled another lever. There was a tremendous explosion and the entire building above me crashed into ruins, thus effectively sealing my retreat, which I had always ready for just such a catastrophe as this. I followed a small and dimly lighted corridor for about five *lentors* and finally arrived at a tiny room filled with all sorts of scientific apparatus, chief among which was an excellent space-phone, operated from a private source of energy.

There is little more to say. I will send twenty-five messages exactly like these which I hope will serve as a warning to any civilization which some of them may reach. If it were possible, I would give complete descriptions of our atomic energy production plants and our magnet-ray machines, but these were known only to the government and the inventors. If there exists a race whose science has enabled them to construct a space-phone like this or some similar instrument capable of receiving any of these messages, then my work has not been in vain, and surely such a race will do its utmost to defend itself against the Extrosians, who have announced their intention of conquering the entire universe if possible. Farewell and may you be fortified against this menace in time to resist its attacks.

THE END

Flamingo

By Clarence Edward Heller

(*Continued from page 329*)

The property man within the cab, waiting for the lady to enter, who, by the way, was none other than a female robot, laughed heartily as he tossed the rare orchids out through the cab window, and appropriated the ring.

Miss Dolly felt very sorry for the unhappy chap and his wasted gifts of adoration, but the Manager and myself took it as a rare jest.

"You enjoyed the music?" he next inquired, at which we both nodded our heads in an enthusiastically affirmative manner.

"I am glad . . . for the 'Orphonium' and the 'Harmonium' are my especial delights.

"The lights, which you perceived in hundreds or thousands tonight, are generated from the power stations located in the Buffalo Locks, by the Edisonia Corporation.

"But, the most marvelous innovation of all is the scenery. It is all relayed by wires from all countries . . . Java, India, Wales, England, Africa, America . . . anywhere at all. Trees, tropical fruits, grasses, foliages, various tints of nature, typhoons, simoons, monsoons, gales or calms, or ice-berg scenes from the frozen Antarctic. Crocodiles basking in Floridian everglades. A fiesta in San Diego.

"For a great sum of money as rental I order whatever scenery I wish in advance . . . my agents attend to that, of course.

"I thus have no strikes, no delays in shipping scenic effects, no temperamental fits and starts from my artists, for which I am so truly thankful.

"Again, a fact that you and your fair companion observed, no doubt, tonight. There were all types of female robots dancing, yet, dare I mention in the presence of your friend that there was nothing suggestive or that would shock the most sensitive person."

I assured him all had been cognizant of this.

"You see," he continued, "the Sex idea has been sunk, submerged, as it were, under the loftiness of my themes. I admit there are other great theatres in the world, all producing extravaganza robot shows, but I aim to give the public the very best."

I hastened to express to the Manager my particular gratitude for this vast work of his art.

"There are no salaries whatsoever," explained the Manager, "and my only human contacts are with the property men and wardrobe personnel.

"That is the medium which has enabled the producer to give his audiences of this era such marvelous productions at such abnormally low figures.

"But, I must be leaving . . . and I am sorry for my intrusion."

I arose and shook his hand, and he departed.

It was now quite one o'clock and the immense concourse was crowded with dancers, who would occupy the floor until daylight.

I observed that Miss Dolly appeared to be a trifle fatigued, so suggesting that we depart, we made our way from the table. Upon receiving her cloak and my own hat and top-coat, without leaving tips of any sort for that was *passé* now in a robot world, we hastened to the moving sidewalk.

We sat down on the way home, and taking the escalator, reached the street level, outside of the apartment hotel in which the Van Swaggers and myself resided.

Miss Dolly's face lighted up as she indicated the roof of the Astoria Hotel, one hundred and sixty-five stories above the pavement, with a wave of her hand.

Peering upward I observed the night Limited Orient Express, leaving for Japan on their twelve-hour schedule, from its runway on the top of this mammoth hostelry.

At last, at the door of her parents' apartment, I took an old man's privilege of kissing the fair Miss Dolly a Good Night, and she asked me if I still had the rose.

I took it from my pocket, and she kissed it, and then I followed suit.

I did not blame Miss Dolly much, for she is young and romantic, but a man of my years!

She wished me to see some ocean flats with her the next afternoon near Brighton . . . and as I tendered her wrap to her, which the ever-wakeful female robot took in her hand, through the slightly opened doorway, I passed in my hat, also, in my confusion.

Miss Dolly laughed merrily as she passed my hat out to me and told me I had every young man of her acquaintance completely outclassed for *distingué* boyishness.

I went to my rooms on air.

Taking a glass of synthetic soda and brandy from a wall-faucet, I sat down and contemplated the evening.

What a wonderful show and what a grand wife Miss Dolly would make for some man.

And, thinking jointly of the promised inspection of ocean flats for the next day and what an auspicious occasion to propose to Miss Dolly, I began to prepare for my bed.

Scratching my head, the lilting notes of "Red Love" haunted me; and the lovely Mlle. Flamingo, who had the face of, er . . . Miss Dolly, in my dreams.

I hoped that the operating scene in the amphitheatre would not interfere with my night's repose as I leaned from my Davenette couch and extinguished the Mazdalier lights on the floor.

THE END

The Universe Wreckers

A FEW men of science are now predicting that within a relatively short period of time space-travel will be taken out of the realm of mere possibility and will become an undeniable reality. Mr. Hamilton, in his final chapters of this serial, in no uncertain manner, depicts some of the thrills—and dangers—of space-travel, when it will have become a more or less perfected actuality. This instalment runs along in the true Hamilton manner—there is plenty of science, plenty of action and plenty of plausibility in "The Universe Wreckers."

Illustrated by WESSO

WHAT WENT BEFORE

WHEN the scientific world confirms Dr. Marlin's observations on the alarmingly perceptible increase in the rotatory speed of the sun, matters have taken a serious turn. During a conference at the capitol, at which a number of eminent astronomers are present, various theories are propounded as to the cause of this accelerating speed and its effect on the Earth. They are convinced that the cause, whatever it may be, is on Neptune, and that several men must be sent to Neptune to learn the cause and perhaps find a cure.

The impossible is accomplished. A Space-flier is built and outfitted in record time and is sent on its way with three scientists—Drs. Marlin, Whitely, Randall Markham—and Hunt, who is to report on the findings and the trip. Hunt is the relator of the story. Four space-walkers, specially designed to be used by the men outside of the space-flier in interplanetary space in case of an emergency, are also included among the accessories.

All goes well until the space-flier reaches the asteroid zone, where they are in imminent danger. They escape with only minor damages, which they repair in open space by means of the space-walkers. A comparatively short time later they come within the atmosphere of Neptune, and find that planet's surface completely covered by a metal roof. They go along and above this roof until they come to a circular opening, through which they enter. Once beneath the metal shield, they see vast compartment-cities with countless strange structures. They decide to separate, so Marlin and Hunt, in the space-walkers, venture further to learn about Neptune and the disk-like beings that prove to be the inhabitants of this planet.

In the midst of their investigations, Hunt and Marlin look up to see the space-ship attacked by the Neptunians and part of it rent asunder. They continue on their way, bemoaning the loss of their friends, but more intent than ever to find the cause of the trouble. Soon they are discovered by some of these disk-like creatures, who, immediately after the foremost utters a staccato cry, fling themselves straight forward upon Marlin and Hunt. A battle ensues, in which the Earth men are victorious.

The two men escape, but are caught again and brought before the Council, in whose center is an intelligent speaker in the form of a globe, which tells them in detail the history of the planet Neptune and what the inhabitants had to do to protect themselves from complete extinction, even though it meant a terrible annihilation for almost all the other planets. When the globe has finished "speaking" the two men are surrounded by the guards once more and imprisoned. So much being dependent on them, Marlin and Hunt take the only possible chance of escape—poor as it is—in order to attempt to get back to Earth.

CHAPTER XI (Continued)

Desperate Chances

IN the ante-room compartment stood the usual files of Neptunian guards, and as we saw them, far beneath us, we heard a sharp staccato order from one of them, saw them standing aside from the entrance to the great circular Council compartment. Then, as we watched, we saw emerging from that circular compartment in a moment more, thirty Neptunians, the supreme Council of Thirty before which we had been so short a time before! They were conversing now in their staccato speech, no longer held silent by the synthesizing of their minds in the great globe-mechanism, and as we watched them from far above, we saw them, surrounded now by the files of guards, passing across the ante-room compartment and through a door in it, toward the sunward side of Triton. When they had gone, the ante-room compartment empty beneath us, Martin pointed downward.

"Down here, Hunt!" he whispered. "If we stay longer on the wall-tops we'll be seen by some cylinder passing above, and if we get down into this compartment, we can make our way to the dark side!"

"You're going to try to steal a cylinder on the dark side?" I asked, and he nodded.

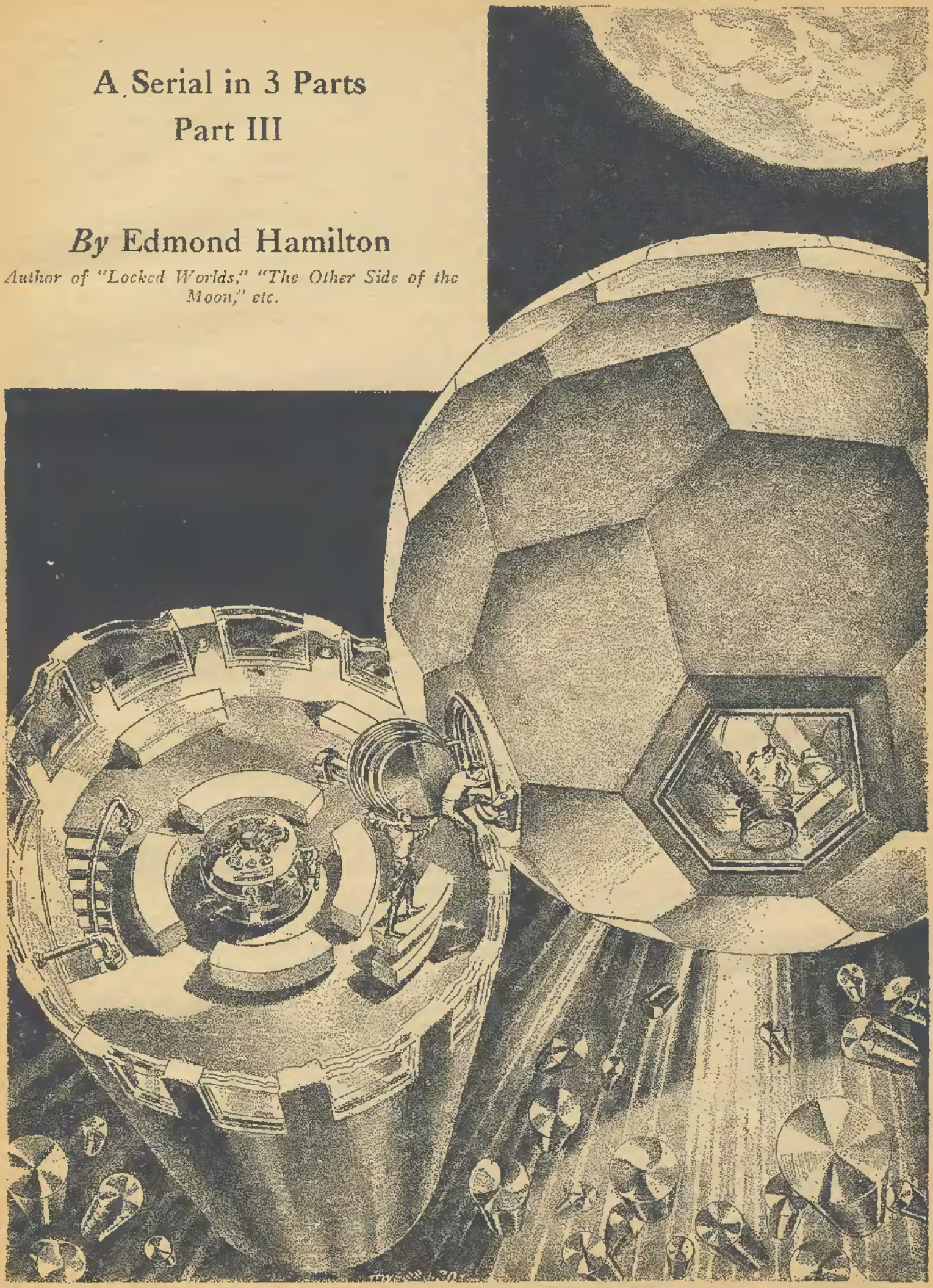
"Yes, in the darkness there, where the Neptunians are sleeping, we'll have a chance to get at one. But we must hurry, for there's little time left before the great signal comes for those on dark and sunward sides to change places!"

So, spurred on by that necessity, we swung ourselves over the wall's edge and then dropped down through the dusk two hundred feet toward the ante-room compartment's floor. Yet that great drop was to us not more than a drop of a tenth that distance on earth, so slowly did we float down toward the floor, breaking our fall a little by scraping along the smooth wall. We struck the floor, tumbled in a heap there, and then straightened, gazed about. The ante-room was quite empty and in it were but three of the broad low doors. One led back to the cell-compartments from which we had escaped, another led to the sunward side. Through that had just passed the Council of Thirty and their guards. The other led into the great circular Council compartment itself. The last, it was clear, was the only one that held out to us any prospect of reaching the dark side, so we

A Serial in 3 Parts
Part III

By Edmond Hamilton

Author of "Locked Worlds," "The Other Side of the Moon," etc.



In an instant Marlin and I had clambered to the drifting cylinder's edge and to the open outside door.

passed through it quickly and into the great Council compartment, moving now in great floating leaps each step.

The great circular compartment was as empty of life as the one which we had just left, the twilight dusk in it dispelled somewhat by the soft-glowing disks in its walls. The great ring-table in it had in the seats around it no Neptunians of the Council now, but at that table's center stood still the great metal globe whose strange mechanism made of the thirty minds of the Council members a single mind, in perception and action. Knowing even as we did that it was but a lifeless mechanism now, without the Council's members connected to it, it was yet with some awe that we stared toward that great mechanism, to whose voice we had listened so short a time before. Much would I have given to have examined it, to have inspected whatever strange mechanism lay within the globe, but time now was our enemy. Soon the signal would come that would send the millions of Neptunians on dark and sunward sides streaming across Triton to change their sides. And unless we could steal one of the cylinders and escape before that signal came, we would inevitably be discovered.

So, sparing only a glance toward the great silent globe, Marlin and I moved silently across the great Council compartment, toward one of the low doors in it that led apparently toward the dark side of Triton, to our right. Cautiously we passed through that door, finding ourselves in another anteroom compartment, as empty now as the one through which we had already come. Swiftly we moved across it, in the great floating leaps that each step of ours made now, toward the door in it that led in the direction of the dark side. But even as we moved toward that door, as we stooped to pass through it, Marlin and I shrank suddenly back, appalled. For as we bent toward that door, the sound of staccato voices had come to us from just ahead, and we had seen in that moment that there were Neptunians in the next compartment, several armed with ray-tubes, who were coming straight toward that door, straight toward us!

A moment we glanced wildly about through the dusky compartment as they came toward us, then we had leaped aside from the door, had reached one of the compartment's corners, leaping more than a score of feet toward that corner and crouching there in the dusk, even as the dozen Neptunians came through the door! It was our one chance of escaping them, the chance that they might not perceive us in the compartment's corner through the twilight dusk that reigned in it. But I knew that so keen were their great bulging multiple eyes that it was against hope that I hoped. The Neptunians who had come into the compartment, however, seemed not to notice us as they entered, passing across it toward the great Council compartment, conversing among themselves in their snapping speech-sounds as they did so. Tensely we crouched there, stiffening suddenly, as we saw one of the disk-bodied monsters suddenly turn and glance back across the compartment in our direction. But in the next moment he had turned back, not seeing us, and then they had passed through the opposite door, their strange voices passing from our hearing.

Marlin and I straightened, with long breaths of relief. "Close, Hunt!" he whispered. "But on to the dark side —we've little enough time left!"

"We're almost out of the twilight band now," I told him, "and in the dark side we'll be a little safer."

AND now we were moving quietly through the door from which the approach of the Neptunians had startled us, through the compartment beyond it and on through another and another. These compartments of the twilight band seemed for the most part quite empty, filled neither with masses of working Neptunians like those of the sunward side, nor masses of sleeping Neptunians like those of the dark side. We had found, however, that the compartments of the twilight band were in fact used only for the housing of the Council of Thirty and of the other activities and departments of the rulers of the Neptunians, their only purpose aside from that being to provide easy access from the dark to the sunward side of Triton, and *vice versa*. So it was that now as we crept through the twilight dusk of those compartments, we found them almost wholly empty and tenantless, though once or twice we were forced again to seek hiding in the shadows as we heard the staccato voices of Neptunians in the distance. Once, too, we were startled by one of the cylinders throbbing by close above us, and since we had had no time to hide from it, thought ourselves discovered by it, though after tense minutes it became plain that its occupants had not seen us.

But soon the twilight of that narrow band was deepening, and almost at once, it seemed, we were moving from that twilight dusk into a deep darkness that obscured all things about us. We had reached the dark side of Triton, we knew, and now moved more carefully still, for upon that dark side, we knew equally well, slept half the massed millions of the Neptunian races. The first few compartments which we traversed in that darkness, however, were as empty as those in the twilight behind us. But then, as we moved silently on, we came into the first of the great sleeping-compartments. Even like those which had puzzled us so on Neptune it was, with its towering walls lined with intersecting shelves whose openings, twice as long as they were high, were ranged in rows, one above the other, like giant pigeon-holes.

This sleep-compartment, though, was not empty like those upon Neptune, for in its hundreds of shelf-openings, its great pigeon-holes, there slept hundreds upon hundreds of the disk-bodied Neptunians! Their seven short limbs folded up around their disk-bodies, they reposed in those openings with their bulging, glassy eyes as open as ever. It was evident they all were sleeping, since the dimness of the day upon Neptune had made lids for those eyes unnecessary in the evolution of their strange race. And eery was that sight to Marlin and myself, as we stepped silently into and across the great sleep-compartment. For it seemed to us that the hundreds of Neptunians reposing thus in those wall-openings were regarding us fixedly with their great multiple eyes, watching us as we moved across the compartment. None stirred, though, as we made our way across it to the opposite door, and moved into the next, which we found to be another sleep-compartment also, its wall-openings, too, holding hundreds of the sleeping monsters.

Through a dozen such sleep-compartments we went, moving with infinite quiet and care, lest any of those sleeping thousands about us be aroused by any sound. And almost it seemed to Marlin and me as we crept on that that hope was ended in any case, since so far we had found none of the landing-compartments for which we searched, none of the cylindrical fliers in which alone we could escape. We had passed through other com-

partments that held the great heat-radiating globes, now, great glowing globes whose intense heat was not radiated out horizontally at all, but sent up in vertical heat-currents, which by convection in some way warmed all Triton's atmosphere. Past these and through still more sleep-compartments we went, pausing now and then as from the distance in the dark side there reached us a few staccato voices; still we came not upon any of the landing-compartments for which we searched.

Despair was growing in me as we crept on through the sleep-compartments, through the thousands of slumbering Neptunians. For soon would come the signal that would awaken all those Neptunians about us, I knew, and unless we found a landing-compartment, a cylinder that we might steal before then, all was lost. Even with such a cylinder, indeed, little enough hope was ours, since we dared not attempt to get to the twenty controls of the great sun-ray across the swarming sunward side. Our greatest hope would be to escape from Triton in it, if possible through the great roof that surrounded Triton, but even that hope seemed a futile one now, since, as we went on and on through the dense darkness of this sleeping side of Triton, we were moving still through a maze of sleep-compartments, groping blindly through the vast checkerboard maze of intersecting, towering walls. And as we came into still another of the sleep-compartments, with its massed sleeping Neptunians in the wall-openings around it, I halted beside Marlin, twitched his sleeve.

"Marlin!" I whispered. "That signal will be coming soon—this dark side's sleeping millions will be waking around us, and we've seen no sign of cylinders yet!"

"We must go on, Hunt!" he whispered tensely. "It's our only chance now—to get to one of the cylinders before they awaken!"

"But if we were to head in a different direction——" I began, then was abruptly silent, stiffening suddenly, as Marlin did, beside me.

For there across the dark compartment from us it had seemed to us that one of the sleeping Neptunians in the wall-openings had moved! Fixedly, in that moment, we stared toward it, its own great glassy eyes staring back toward us like those of all the other sleeping monsters. Was the creature asleep or waking? The question burned in our brains at that moment as Marlin and I stood there motionless, gazing toward the Neptunian. It was but the merest moment, though, that we gazed thus at the thing transfixed, for in the next instant it and the one in the opening beside it, roused by its own movement, had moved again, and then with their low staccato cries of surprise sounding together as one, the two Neptunian monsters had leaped down to the compartment's floor from their openings and were confronting us!

CHAPTER XII

Through the Roof

EVEN as the two creatures leaped down to the floor, and before they could change their low cries of astonishment into louder cries of alarm, Marlin and I had leaped across the compartment toward them! For a full two-score feet in one great leap we shot toward them, a feat only possible with Triton's lesser gravitation, and only possible, too, because we knew in that moment that a single loud cry from the two creatures would bring to their aid the hundreds of Neptunians sleeping about us. Before either could utter such a cry, we two had shot through the air and were upon them!

So astounded were they with our appearance and our supernatural leap across the compartment, that before they could put themselves into a posture of defense, we had struck them, had knocked them to the floor and were grappling with them. In that first moment of contact I had reached for the mouth-opening of the disk-bodied monster at whom I had leaped, had gripped that opening in the top of its disk-body to prevent its outcry and then had striven to lift the thing sidewise, to hurl it against the floor. But great as was my strength against Triton's lesser gravitation, the strength of the Neptunian I held was greater still, and its weight, due to the weight-disks worn by it, was enormous. In an instant its seven great limbs were clutching for me, grasping me, and as I strained there against that great monstrous disk-body's grip, I knew with fatal certainty that never could I match my strength against its own. For even as I struggled desperately with it, Marlin struggling as wildly with the other beside me, the thing was lifting me with its own great limbs from the floor!

Upward it drew me with those powerful limbs, its bulging glassy eyes staring from its disk-body's edge straight into my own, as we grappled desperately in the dark compartment with the sleeping Neptunians all about us! I felt myself being overcome, my strength puny beside the strength of that monster, and as I clutched wildly still at the mouth-opening in the top of the disk-body, I thrust my clenched fist down into that small round mouth-opening, half by chance and half by design, closing it thus with my balled fist. Instantly the creature's body turned and twisted frantically, its grip upon me forgotten for the moment, its whole body's mass seeming to heave and twitch as my hand thus cut off the passage of air into that mouth-opening, into its body! I was throttling it, I knew, and hung fiercely to my grip upon it, my clenched hand still within its mouth-opening, while the thing swayed and tore at me with ever-decreasing strength. A moment more and its struggles ceased, it collapsed limply to the floor, and I staggered up again to my feet.

In a single glance I saw that the other Neptunian had gripped Marlin and was crushing him against a corner of the compartment's shelving and instantly, with a single great leap, I was upon that other monster, had gained upon it the same throttling grip which I had found was so deadly to these creatures. In a flash the Neptunian had released his hold upon Marlin, was whirling me around the compartment, shaking me this way and that, and wildly attempting to tear itself loose from me, but with the last of my strength I hung to it, and in a few moments it, too, had weakened, then had slumped down in a lifeless, grotesque mass. And as I rose from it I saw that Marlin had staggered up likewise, was coming toward me. None other of the Neptunians had been aroused by the noise of our mad combat, because in the first excitement of that combat the two Neptunians we fought had not thought to cry out, and after I had gained that throttling hold upon them they could not. So around us the silent ranks of Neptunians slept on unaroused, their open, glassy eyes full upon us even in their sleep, while Marlin and I were stumbling toward the compartment's door.

"On, Hunt!" he whispered hoarsely. "We still have

a chance, if we can find a landing-compartment, can steal one of the cylinders before these sleeping Neptunians wake!"

Through the next compartment we went, and the next, and the next, all sleep-compartments, filled with rows of slumbering Neptunians like those behind us, but in our progress we had come upon no landing-compartment. And though we knew that such there were here and there on Triton's dark side, we could not tell, in the darkness and with the huge walls towering all around us, in what direction from us they might be. We could but blunder aimlessly on through the maze of adjoining sleep-compartments in the blind hope that we might chance upon one of the landing-sections, and as we went on, staggering in great, irregular leaps through compartment after compartment, all filled either with masses of sleeping Neptunians or with great heat-radiating mechanisms, we knew that at any moment might come the great signal of light that would awaken the hordes around us.

Never could there have been flight more nightmare-like than that of Marlin and myself through the dark compartments of Triton's dark side, in blind search for the cylinders which alone held out to us any chance of escape. Through the sleep-compartments, with their masses of open-eyed and sleeping disk-bodied Neptunians, through the compartments where reared the great glowing globes whose radiated heat alone held back the cold doom that so long had threatened these strange beings, through compartment after compartment in a flight made more grotesque and unreal to us by the strange method of our progress; by the strange, great, smooth leaps that we made instead of steps, great floating leaps of a score of feet in which we rushed through the dark sleeping compartments, reckless now of the few Neptunians who might be waking and moving upon the dark side. Then suddenly as we leaped toward the door of still another sleep-compartment, poised an instant to leap through that low door, we halted, gazed with abruptly-flaring hope ahead. For the next compartment, we saw, was a rectangular one and greater in size than any we had passed through as yet, and in it there stood the great gleaming shapes of a score or more of the cylinder-fliers that we sought!

With hearts pounding Marlin and I crouched in the low door, gazing through the darkness toward those great cylinders, that gleamed a little in the feeble light that came down upon Triton's dark side from the stars through the great roof overhead. We saw that the low doors in the sides of those cylinders, near the bases, were open, and from them there came to us the throbbing of their mechanisms, inside! It was evident that these were part of the countless cylinders used to help in transporting the Neptunian hordes from dark side to sunward side of Triton, and *vice versa*, and it was equally evident from those throbbing mechanisms' operation, that the hour of awakening for those hordes was at hand and that these were waiting for that awakening. For there stood also, between us and the nearest of the cylinders, three tube-armed Neptunians who were conversing in brief, snapping speech as they waited!

FOR the moment, at sight of those cylinders, Marlin and I came near to throwing ourselves toward them regardless of the three, but that we knew would be suicide, so despite our torturing agony of soul we waited there in the doorway, gazing desperately toward the cylinders. And in a moment, as we sought in vain for some way to get to the nearest of those cylinders, there came a final staccato order from one of the three Neptunians and at that order the other two turned and passed through a door in the landing-compartment's side opposite from us. It was our chance, the chance for which we had hardly dared to hope even, and no sooner had the two Neptunians disappeared through the opposite door, the other standing with his eyes following them for the moment, than Marlin and I had crept out a little bit into the landing-compartment and then with a great simultaneous leap had shot through the air toward that remaining Neptunian!

There was no chance for resistance on the creature's part. For even as we knocked it sidewise with the force of our leap Marlin had grasped the creature's limbs and with fierce, desperate strength I had with my clenched fist closed its mouth-opening in that method whose deadliness had been proved to me in our other battle. The thing threshed wildly, then it, too, had gone limp, and had collapsed. And in the next instant Marlin and I were rising from it, were leaping across the compartment toward the open low door of the nearest great cylinder, from whose great gleaming upright bulk before us came the throbbing of its powerful generators. And then, a dozen feet from it, we stopped dead, and from Marlin came a hoarse cry.

For at that moment there had swept over us, through us, past us, from the direction of Triton's sunward side across its surface, a band of intensely brilliant white light, white light that blazed brilliant for the moment all around us, turning the changeless night of Triton's dark side around us for the moment into a white and blinding day, and then sweeping swiftly on, around Triton's surface! It was the great signal of awakening, the signal for the millions of sleeping Neptunians about us to awake and change places with the swarming millions upon the sunward side! And even as that dazzling signal came, as Marlin and I stood stupefied there for the moment before the looming cylinder's open door, there came from all around us, from over all the dark side's great extent and from all its maze of sleep-compartments, a rising babel of staccato voices, the voices of its awakening Neptunian millions! Then, before ever we could recover from the stupefaction that in that instant held us rooted to the spot, there had poured into the great landing-compartment from the compartments on all sides of it swarms of hastening Neptunians, swarms of disk-bodied monsters, who in that moment saw us, uttered as one a sharp great cry of discovery, and in the next moment were rushing from all sides toward us!

"The cylinder!"

It was Marlin's wild cry, that aroused me from the stupefaction of amazement that held me. Straight before us, a dozen feet away, was the open door of the nearest cylinder, and in the next split-second Marlin and I, as one, had leaped toward it, had shot through that door, into the cylinder's interior, even as the Neptunians raced toward us. The next instant I had reached frantically for the door, had with one swift motion slid it clanging shut, and then as the Neptunian masses outside hurled themselves toward it, Marlin and I were throwing ourselves up through the openings toward the cylinder's uppermost section. In one leap I was at the central control-standard, fumbled frantically with the green control-studs for an agonizing moment, and then, just as we heard the Neptunians below flinging themselves against the door, the great throbbing cylinder shot upward!

Up over Triton's dark side we rose, a dozen slender force-rays criss-crossing about us from beneath in that moment, and as we glanced momentarily down we could see the Neptunians in the landing-compartment beneath rushing toward the other cylinders there! And glancing far across the surface of Triton, we could see all its mighty compartment-city, dark and sunward sides alike, swarming now with Neptunian hordes as the end and beginning of their strange day and night periods was signalled. Over the great compartment-city, over all the countless millions of Neptunians that swarmed through it, there was spreading a crackling roar of excited tumult, as our escape was discovered. And from far away on either side and from beneath us, scores of great cylinders whirled toward us!

"Up—*up!*" Marlin was shouting now beside me. "They'll have us in another moment!"

I pressed swiftly again the studs before me, and as the cylinder shot up and sidewise with terrific speed on an upward slant I shouted back to Marlin over the roar of air about us. "The roof-openings!" I cried. "We'll make for the nearest one!"

But as the cylinder flashed obliquely upward, Marlin and I crouching in the two opposite seats at the control-standard, I became aware of the swarms of racing cylinders behind closing in upon us. And over the dark and sunward surfaces of Triton that great mounting roar of sound was spreading, as the Neptunian hordes saw our wild attempt at escape. Up—up—and now we were racing close beneath the great roof, transparent from below, with the pursuing cylinders drawing ever nearer, their Neptunian occupants more skilled than I in their operation. And now, too, from those uprising, pursuing swarms were directed toward us slender pencil-like rays of pale light, visible only near their source, concentrated force-rays, that would cleave through our cylinder as through paper!

On and upward—and now as we shot on, with the swarming cylinders hurtling hotly after us in wild pursuit, with the throb of our generators and the roar of air about us thundering in our ears, with the wild tumult of the massed Neptunians on Triton's surface coming dully up to us from beneath, Marlin and I were gazing with tense eyes ahead and upward. The great opening, the great sliding section of the roof down through which we had come—that was our one chance to escape from Triton. I knew that unless we could win through that opening, out of Triton's enclosed world, we were doomed. On and on we went—our eyes still upon the vast roof overhead in search of that opening in it, when suddenly Marlin cried hoarsely in my ear, and pointed ahead. And there from ahead were rushing toward us other scores of cylinders, other swarms of racing cylinders answering the spreading alarm, while still others were shooting up from below toward us! From behind, from ahead, from beneath, the cylinders' swarms were converging upon us in that moment, and as instinctively I slowed our cylinder's mad rush I looked upward, toward the great roof——

"The opening-section!" I cried suddenly. "But it's closed against us!"

For there above, indeed, was that great circle in the vast transparent roof that we knew could be slid aside and opened by its Neptunian guards in the bright-lit little cage-room suspended beside it. My one hope had been that in our stolen cylinder we might deceive those guards of the great orifice into opening it for us to pass. But that hope was gone. Behind and below and before us were the pursuing swarms of cylinders and the Neptunians in the cage-room above knew that something was wrong, and had not opened the great circle for us. There were other similar circles, similar opening-sections, in Triton's roof, but it was too late now to seek them because from all about us the swarming, racing cylinders were rushing upon us. In another moment their rays would shatter us! I heard Marlin, beside me, utter a low exclamation of utter hopelessness as those cylinders rushed upon us, held our own cylinder for the moment motionless there in mid-air beneath the great roof's opening-section, and then suddenly reached toward the control-studs, even as Marlin's hoarse cry was sounding beside me.

"The end, Hunt!" he was crying. "The cylinders are almost upon us—and the opening-section is closed!"

"The end maybe—but not this way!" I shouted fiercely, at the same moment sending the cylinder flashing straight upward with all its speed. "Hold to your chair, Marlin —*we're going to smash through that opening-section of the roof!*"

Even as I cried out thus, our cylinder was rising upward toward the roof with all the power of its throbbing generators, hurtling upward at speed unthinkable toward the great circle of the opening-section! I was aware in that moment of the crowding swarms of cylinders about and beneath us loosing toward us a storm of crossing force-rays that we drove clear of in that instant. I was aware of the Neptunians in the cage-room beside the great opening-section rushing wildly about as we shot upward like the cylindrical projectile of some giant cannon! The next instant I caught the gleam of the transparent roof, of the opening-section just above us, Marlin and I instinctively crouched lower in our seats, and a moment later there was a blinding, stunning shock that seemed to split the universe with its detonation. We were dragged up from our seats with awful force. And then as we straightened up and looked out, we saw that the cylinder had smashed through the great opening-section and was throbbing above Triton's mighty roof!

The cylinder's ceiling, above us, was crumpled and bent badly, but in that moment it seemed a miracle that we had lived through that terrible collision. It was only our awful speed that had saved us, driving us through the opening-section's thick metal even as a cyclone will drive fragile straws and twigs unbroken through a board. Now as we looked downward we saw that the swarming pursuing cylinders were massed beneath the crumpled opening-section and that that circle of the opening-section was slowly sliding aside, bent and crumpled as it was, to allow those cylinders to emerge through Triton's roof after us! And up they came, a full hundred of them, racing up after us at utmost speed, up from the great metal roof of Triton, dark and opaque to our eyes from above, and up through its atmosphere close on our track!

THROUGH the rushing roar of air about us, the throbbing of our generators, I was aware of Marlin shouting something beside me. I was gazing ahead for the moment, as that wild flight and pursuit passed on through Triton's atmosphere. Giant Neptune's cloudy green sphere bulked gigantic in the heavens before us, and far beyond it was the little fire-disk of the sun. Then I turned back to see the hundred pursuing cylinders, getting ever closer behind us. As I started at the sight, I became aware of Marlin shouting beside me, and at the

same moment realized the import of his words. I realized that the throbbing of our generators was halting, hesitating, failing! Our great crash out through the roof had broken some part of their mechanism and now they were failing rapidly, and the speed of our cylinder was slowing!

And behind us the scores of onrushing cylinders were closer—closer! Already toward us again from them were leaping the slender pale force-rays, missing us at that distance but sweeping close about us. With an utter tenseness of body and spirit, Marlin and I watched them drawing closer, as our cylinder shot on through Triton's atmosphere. Suddenly another storm of rays had shot and swept toward us from behind, and one of those wild-whirling rays, in a single instant, clove through the cylinder's uppermost sides like a sword of fire through cardboard, slicing away completely the already-crumpled roof above us and the upper half-dozen feet of the walls! Instantly a flood of icy-cold air rushed in upon us and seemed in that moment to freeze us through. At the same moment the throbbing generators ceased completely to operate, the cylinder slowing swiftly on its rush forward, drifting helplessly there in the outer reaches of Triton's atmosphere, while from behind, like leaping creatures of prey, the scores of cylinders rushed upon us!

Neither Marlin nor I voiced a cry in that moment. We could only stare as if we were automatons, toward the onrushing cylinders, the oncoming doom. We had run our course at last. It seemed in that moment that all our bitter battle for freedom, our toilsome escape from our cell, our flight through Triton's sleeping side, our stealing of the cylinder and wild crash upward through the great roof's opening-section—that all this futile flight of ours was reenacting itself with lightning swiftness before my eyes. The swarming cylinders were almost on us, holding their rays now as they saw us helpless until they were closer, their great mass whirling straight toward us. And then, as I gripped the control-standard before me, expectant in that instant of the end, I saw that onrushing mass of cylinders suddenly shattered as though by gigantic blows from above. I saw the scores of cylinders driven this way and that in a single instant with colossal force, even as they rushed to annihilate us! And I looked dazedly up, was looking up——

"The space-flier!" Marlin's insane cry was sounding there beside me. *"It's the space-flier—and Whitely and Randall!"*

The space-flier! There high above us and above the pursuing cylinders it hung, a gleaming faceted ball, at sight of which I could only gaze stupefied. I saw in that moment that down from its lowest ray-opening there was radiating toward the cylinders that had been hurtling in a mass toward us, a pale, almost invisible great force-ray and that it was that ray's giant pressure that had shattered the mass of our pursuers, and in an instant had driven their massed cylinders to all sides! Then, as they broke thus in wild confusion before that swift great force-ray from above, the space-flier was flashing down toward our roofless, drifting cylinder, was hovering just beside us, touching that cylinder, with the round outer door in its facet within our reach! In an instant Marlin and I had clambered to the drifting cylinder's edge, had whirled open that outer door of the space-flier. When we threw ourselves into the little vestibule-chamber or air-lock, shut the outer door, and turned toward the inner one, that inner one was opened and Whitely—Whitely!—was pulling us inside!

"Whitely—Randall—" we were babbling in our excitement, "we thought you dead—saw fragments of the space-flier and thought it destroyed——!"

"No time now to tell you, Marlin—Hunt—" Whitely was hurriedly saying. "Those cylinders are forming again. They're coming up toward us! Head out from Triton, Randall—full speed!"

But even as he had spoken, Randall, in the control-chair, had flashed his hands over the six control-switches, and as Marlin and I clambered with Whitely into the other three chairs, we felt ourselves pressed down with terrific force against them as the space-flier shot out from Triton with colossal speed! But at the same moment the cylinders that had formed again into their close-grouped mass, had leaped forward with us and the next moment saw space-flier and cylinders alike whirling out from the atmosphere of Triton into the empty void of space! I glanced back, saw that the cylinders were close behind our hurtling space-flier, flashing after it somewhat beneath it, so as to clear its great force-ray shooting back toward Triton and flinging it outward. And as I glanced back, I saw Triton's dull-gleaming sphere, with the pale giant force-ray that stabbed from its side toward the sun, growing each instant smaller! But dead ahead of us, though somewhat beneath our level, there loomed the colossal green sphere of Neptune, growing in size as we rushed on at immense speed from its moon!

On we went, and as Randall's hands flashed over the control-switches, Marlin and Whitely and I staring tensely forth with him, we were aware that from the mass of onracing cylinders behind slender force-rays were again questing toward us, though the range was too great for them to loose them accurately at this terrific speed. At any moment, though, one of those concentrated, pencil-like rays might cleave through our space-flier in a lucky hit, and unless we escaped from these relentless pursuers, the space-flier and ourselves were certain of destruction. This I saw, and saw too that Neptune's colossal cloudy sphere lay close before us, so awful was the speed of our flight and pursuit, and as it loomed gigantic before us, filling the heavens, it was apparent that we would pass close above its surface. Suddenly I turned to Randall, shouted in his ear above the thundering throbbing drone of our generators.

"Neptune!" I cried. "There's a chance to smash these pursuing cylinders there!"

"But how—?" he began. Shouting in his ear, I explained to him the desperate inspiration that had come to me. I saw his eyes and those of Marlin and Whitely widen as they heard, and then he nodded grimly, clutched the control-switches tighter.

And now about us was sounding again the roar of air as we shot through Neptune's atmosphere, shot above the surface of the huge planet with the cylinders rushing still at equal speed behind us, their deadly rays stabbing this way and that in slicing sweeps toward us. Through the cloudy mists of Neptune's upper atmosphere we flashed, straight onward, with the dark metal surface of the giant world's vast roof clear now to our eyes far beneath. And as we shot over it I saw Randall's grip tighten on the control-switches, saw him glance back toward the pursuing cylinders, behind and a little beneath us, and then abruptly he had flung open the switch of the great force-ray that was driving us on, our rear-ray! Instantly the speed of the space-flier slowed, and in a split-second the onrushing cylinders, racing on unslowing in that moment, were hurtling past beneath us. And

as they did so, another switch had clicked under Randall's hands and straight down upon those cylinders from the space-flier's bottom was driving down another mighty force-ray!

In the next instant we had a glimpse of those massed cylinders that had been rushing thus beneath us driven down by the power of our great force-ray with inconceivable speed and force, driven down in a whirling, confused mass toward the vast metal roof of great Neptune below! And as our great ray, traveling across their mass, drove them thus downward with colossal power, we saw a moment later the cylinders of that mass crashing downward against that roof, shattering into crumpled, wrecked masses of metal upon the mighty structure, annihilated with all inside them on that roof as our great ray drove them down against it!. Half at least of that mass of cylinders perished thus in the first crash downward and before the rest could gather again to whirl up to the attack, our great ray was playing upon them also, crashing them down upon the great roof of death, until in only a moment more but a half-dozen of the cylinders remained intact! And these, as their fellows crashed to death beneath us, were gathering and speeding away from this death that smote from above, were going back toward the dull-gleaming disk of Triton!

Marlin and Whitely and Randall and I were all crying out in that moment as the surviving cylinders flashed away in flight, and then Marlin and I had turned toward our two friends. "Whitely—Randall—!" Marlin was saying. "You escaped those Neptunians that first discovered us, then? We saw the fragments of wreckage your pursuers brought back, and Hunt and I never dreamed you might still live!"

"It was a trick that enabled us to escape," Whitely explained. "When they discovered us there beneath Neptune's roof—chased us up through that roof and up into the great cloud-belts, I saw that we could not long escape those pursuing cylinders. So, while Randall drove the flier through the mists and while they searched in those mists for us, I battered and broke with blows of a large tool some of the spare plates and instruments we carried. Then, as they came closer to us, their force-rays slicing through the mists in search of us, I cast those fragments loose from the flier, and when they struck against the pursuing cylinders in the mists, when those cylinders saw the wrecked fragments, they had no doubt but that their force-rays had struck us somewhere in the cloud-layer and annihilated us. We lay in the shrouding mists until we saw them returning toward Neptune's surface. We realized then that you two had been captured by whatever manner of creatures these Neptunians were, and saw the cylinders, with you in one of them, going down beneath Triton's roof. For days, therefore, Randall and I waited around Triton's surface, hoping against hope to get down inside in some way and find you, and had almost given up hope, when we saw the cylinder you had stolen racing up from Triton, and were able to save it and you from the pursuing cylinders."

"But you, Marlin—Hunt—" Whitely continued. "You have learned how and why these Neptunians are sending forth the great ray that is turning the sun faster? We saw that ray and another great ray on opposite sides of Triton—Is it not possible that we alone might be able to halt that ray?"

Marlin solemnly shook his head. "No chance, Whitely, for us," he said. "Perhaps no chance even for all the forces of earth!" And quickly he told, while Whitely and Randall listened enthralled, of the captivity of us two in Triton's strange and swarming world; of the gigantic tale of Neptune's past and the purpose of its peoples, as it had been told us by the great globe of the Council of Thirty; of our desperate escape and flight across the dark side of Triton and our wild crashing upward through the roof and out from Triton. "We alone," Marlin concluded, "can never halt either of those great rays, for each has countless cylinders and Neptunians within to guard it, and each has twenty control-boxes of which one alone can keep it operating. No, our one chance is to get back to earth, to gather there the great fleet of space-fliers which the World-President and the World Congress planned to build in our absence, and to come out in that great fleet with the most powerful weapons available and endeavor to crush these strange Neptunians, to halt that great ray of doom that is turning the sun ever faster! For unless we can do that, unless we can bring earth's fleet of space-fliers out here and halt the great sun-ray, that ray will in sixty days more have finished its work, will have split the sun and loosed doom upon all its planets except Neptune! And so it is back to earth that we must race now at our utmost speed!"

Marlin's solemn voice ceased, and there was silence for a moment in the space-flier, we four gazing toward each other without speaking. By then the flier, with the tremendous impetus of its flight still driving it forward, had swept on and out over great Neptune now, out of the giant world's cloudy atmosphere and into empty space beyond it. And, with Neptune's giant globe filling the firmament behind us, Randall snapped on again our rear force-ray, sent that ray radiating back toward the vast disk of Neptune itself. And then again we were forced deep in our chairs as the flier's tremendous speed accelerated once more, the flier hurtling with greater and greater velocity through the gulf of space toward the far little disk of fire that was the sun, far ahead. For it was toward it, toward our earth, that we were going from Neptune, from the solar system's edge, to carry back word to earth of the nature of the doom that hung above it and to gather earth's forces to forestall that doom!

CHAPTER XIII

The Gathering of Earth's Forces

STARING ahead into space from the control-chair of our racing flier, I heard Whitely's voice from beside me. "Seventeen days," he was saying. "And in two more days we ought to reach earth."

I nodded abstractedly, gazing ahead. "Two days at the most," I said. "We're inside Jupiter's orbit now, and once through the asteroidal belt, there'll be nothing to delay us."

For as Whitely and I gazed outward, Marlin and Randall sleeping now in two of the space-flier's bunks, we could see that we were approaching, indeed, that belt of whirling asteroids that marked the division between the four inner and the four great outer planets of the solar system. To the left, dropping behind us, gleamed the gigantic cloud-belted sphere of Jupiter with its stately train of attendant moons, as great a mystery to us as when we first had passed it. A side force-ray was holding the flier out still from the mighty planet's attraction, while ahead and to the right from us now gleamed crimson Mars. Yet it was not these that held the eyes of Whitely and myself, nor even the increasing fiery circle

of the sun before us, but the bluish-white little spot of light that was expanding slowly in size and brilliance as we shot on toward it, the little spot of bluish light that was our planet, earth.

For days we had gazed toward that little light-spot as our space-flier went on and on through the solar system's vast reaches toward it. For seventeen days, now, even as Whitely had said, we had been racing inward from Neptune at utmost speed on our desperate journey back to our own world. The space-flier's great rear force-ray, pushing back against giant Neptune, had hurled the flier in through the outer reaches of our universe with an acceleration of velocity that was so great as to prove almost our undoing. For more than once that terrific pressure of that acceleration on us, despite our shock-absorbing apparatus, had so affected our bodies as to overcome us with successive fits of nausea and unconsciousness. And once, just after we had swept in past great Saturn and its mighty rings, fearful of those great rings after our former misadventure with them, I had awakened from my sleep-period to find Randall and Marlin, in the control-chairs, quite unconscious from the flier's terrific acceleration, the flier itself speeding onward without any guiding hand on its controls.

Yet despite this we had grimly driven the flier to the utmost acceleration possible, its speed steadily mounting toward the maximum in those succeeding days that we flashed inward from Neptune. For behind us Neptune's calm, green little disk of light, though diminishing steadily in size as we receded from it, seemed like a baleful signal of doom shining there behind us. For out from Neptune, or rather out from its moon, Triton, the giant force-ray of the Neptunians, was still radiating toward the sun, thus shadowing all the solar system with the cataclysmic doom to come. For, as we flashed inward, Marlin had used his astronomical instruments to determine the fact that the sun's rotatory period had now decreased to a little over eight days, and was decreasing still by the same amount of four hours each day, its spin accelerated each day by the same amount as the colossal force-ray from Triton kept upon its side its unrelenting pressure. And within half a hundred days more, as we knew, that rotatory period of the sun would have decreased until its huge mass would be spinning once in every hour, would be spinning then so fast that it must inevitably be riven asunder into a new double star by its own centrifugal force, engulfing all its planets save Neptune alone!

So it was that we spared not ourselves but drove the space-flier in through the solar system toward earth with a speed unthinkable, almost, using an acceleration that was all but death for us. For the one hope of preventing that colossal sun-cataclysm, as Marlin had said and as we all knew, was to reach earth soon and then at once fly back out from earth toward Neptune again with the great space-flier fleet, which, if the World-President and the World Congress had not failed us, would be waiting on earth for us. With that fleet we must sally back across the solar system once more to its outer edge, to great Neptune, and must fall upon Triton and the giant force-ray that was shooting from Triton to the sun, with all our power. If we could vanquish the Neptunians long enough to destroy the giant sun-ray's mechanism, to halt that ray, we would have halted the acceleration of the sun's spin, would have saved the sun and its planets from the cataclysmic doom that now threatened them. But if we could not, if the Neptunians with their countless cylinders and great weapons were too strong for us, then we could but perish there in struggling with them, since in that case nothing could halt the doom that they were loosing from Triton upon the sun and the solar system.

And as Whitely and I gazed out through the flashing flier's windows, we knew that scant enough was the time left for us in which to do these things. Even if we were safe on earth in the next two days, as we hoped, there would remain but little more than forty days before the coming of the dread cataclysm that threatened, and it would require half that time for the space-fliers of earth to make their way back out across the solar system to Neptune. So that now there lay over my mind that deepening shadow of impending colossal disaster that had hovered over all our minds during the strange days of our racing inward through the solar system, making me gaze somberly enough toward the bluish light-spot in the darkness of space far ahead that was our goal now. To the left, though, Jupiter's great globe had dropped far behind now, and as I saw that I cut out our side-ray, and turned toward Whitely.

"We're at the edge of the asteroidal belt now," I told him, "but I'm not going to slow our speed. We'll just flash on through it and take our chance."

He nodded gravely. "I'll wake Marlin and Randall now to help me keep watch," he said.

A moment later, having done so, Marlin and Randall freed themselves of the straps of the bunks and climbed across the flier to take their places beside Whitely in watching for the great menacing asteroids. And as we passed on through the belt of those whirling perils, Marlin and Whitely and Randall watched for hour on hour there beside me, though so vast was the maximum speed at which our flier was going now, more than eight million miles an hour, that before they could more than get a flashing glimpse of a nearby asteroid we would have passed it. We were relying almost wholly on blind chance to take us through the asteroidal belt at that lightning speed, yet so desperate was this grim race back to earth from the solar system's edge, that we preferred to trust thus to chance, rather than to slow our speed or to delay by an hour our arrival on earth. And chance, for the time, favored us, for some hours later we had won through the perils of the asteroidal belt without more than a few split-second glimpses of the great whirling spheres of peril. And then, as we shot across the orbit of Mars with the planet's dull red shield still farther to the right, I began to slow our terrific speed, for by this time the earth was expanding rapidly before us.

And now, too, the sun was flaming before us, in all the halo-like glory of its great corona, with a brilliance blinding to our eyes after the dim shades of Neptune and its moon. Yet even with that brilliance dazzling us we could make out plainer and plainer the sphere of earth, seeming to our eyes a thin silver-blue crescent as it spun there between our inrushing flier and the sun, its tiny moon-spot growing brighter too. Marlin and Whitely and Randall watching tensely beside me, I cut out altogether the great force-ray at the flier's rear, which, even when our speed had reached its maximum, drove us straight onward and kept that speed unvarying against the gravitational influences from either side which were not large enough to require an opposing side-ray. Snapping that rear-ray out, I sent another force-ray from the flier toward the earth-sphere ahead, and as that ray struck and pushed us back with immense power, the space-flier's colossal speed was gradually decreasing.

ONCE more we felt terrific upward and forward pressure in our chairs as the flier's speed steadily slowed, dropped swiftly from eight million miles an hour to six and then to five and then to three. And as we shot in thus toward earth, the millions of miles dropping slower behind as our flier's great faceted ball clicked through space at slower and slower speed, I knew the same question was in the minds of my three friends as in my own. It was reflected in the tensely anxious eyes of Marlin and the imperturbable eyes of Whitely and the unwontedly grave eyes of Randall as the three stared ahead with me. Would the space-fliers that the World-President and the World Congress had promised to build be ready? If not, we knew we certainly could not venture out to Neptune and put an end to the great doom-ray that the Neptunians were stabbing toward the sun. So that it was in a growing suspense of spirit that we watched earth's sphere, with its crescent of bluish-white light at one side, expanding before us.

At ever slower speed we were rushing in toward it, and at last, moving at but a few hundred thousand miles an hour by this time, were driving in out of the void and past earth's shining moon, gleaming in space to our right, its great ranges and strange craters clear to our eyes from its airless surface. But now all our eyes were on earth ahead, since now through the drifting cloud-masses that floated in its atmosphere we could make out the great bluish globe's surface features, could see that western Europe and North Africa lay in the sunlight in that crescent of light at earth's side, but that the North and South Americas lay in the shade of earth's outer side, in the darkness of night. It was toward the dark half-seen outline of North America that I was heading the flier, for by this time, traveling still more slowly, our velocity now being less than a thousand miles an hour, we were entering earth's atmosphere, the rarefied air of its outer reaches roaring about the flier as it shot through it.

"Straight to New York—to the World Congress," Marlin was saying. "There's not a minute to lose."

I nodded silently, at the same time snapping out the front-ray of the flier that was slowing our speed as we shot toward earth's surface, and as its gravitation gripped the flier we were turning until instead of rushing onward we were falling to its surface from high above, as it turned in space before us, falling down toward the surface of the North American continent, whose outline was visible from our great height through the shifting cloud-screen. I felt my heart beating rapidly as we shot thus downward, forgot almost the mighty import of the mission on which we were returning in the mere fact of our return; for we were first of all men to venture thus into the outer void and to return from that void to earth! And as we shot downward I saw the same thought mirrored in the faces of the others, staring down with me.

Down—down—with an oblique ray I was making the space-flier fall slantingly, more and more slowly, toward the northeastern coast of the continent beneath, whose broad, brown surface stretched out greater and greater beneath us. Moments more and as the roar of air about us intensified, mingling with the throbbing of our generators, we shot down from the sun's light into the darkness of this dark side of earth, this night of earth's one side. But now its great surface was changing from convex to concave beneath us, and now as we shot lower still Randall pointed downward and northward with a low cry toward a spark of bright red light, the beam of the great air-beacon of the trans-Atlantic air-liners, at New York. Slower—slower—and in moments more the vast mass of its towering cylindrical buildings, ablaze with outlining lights, was coming into view, with midmost among them the greatest of all, the huge mass of the World Government building.

As our space-flier dropped slowly toward that mighty structure beneath my controlling hands, as it dropped toward the swarms of bright-lit aircraft that were moving to and fro over the great city, so familiar was the scene beneath to us four cosmic voyagers that almost did our great journey, our mighty flight out through the sun's planets through the countless leagues of space to great Neptune, and our grotesque and dream-like adventures upon Neptune and its moon, seem to us indeed no more than dreams. But as we shot lower we were startled from this strange state of mind by one of the aircraft beneath, showing the customary red and green position-lights along its hull, driving up through the darkness toward our smoothly falling space-flier. We saw the three men in the control-room of the craft gazing amazedly toward the gleaming, faceted metal ball of our flier as they circled us, and then from their craft had burst out a score of brilliant vari-colored signal-lights. And as these blazed out there came a moment later an answering blaze of lights from each of the swarming craft below, that shot up now in hundreds toward our falling flier, crowding crazily about it!

Down through the darkness we dropped still, those swarms of aircraft almost jostling us as they seethed thickly in terrific excitement about us. As we shot downward over New York's surface we saw that across all the vast city, and far across the great air-docks to the south even, signal-lights were blazing out, a wild panorama of bursting lights stretching out in all directions! From beneath, too, there came up to us now a terrific roar of mingled voices, the vast crowds in the streets of the huge city sending their cheering cries up to us in a great thunder-roll of sound as we fell toward them. And as I held the space-flier to its smooth drop downward amid the swarming aircraft, I saw that Marlin and Randall, and even Whitely, were gazing across those vast, shouting throngs and across the swarms of madly-darting aircraft that encircled us, with somber, thoughtful faces.

Now we were falling a few hundred feet above the roof of the World Government building, on which a little knot of figures awaited us, and as I gazed from it across the other roofs of the great city I uttered a low exclamation. "On the roofs—you see?" I asked. "Those things of metal—those space-fliers——!"

But they too were gazing toward the roofs, toward the innumerable crystal-like metal forms that we could half-recognize on those roofs in the darkness. But a glimpse only we had of them before the space-flier was sinking downward to the great roof itself, and as Marlin saw the knot of figures on that roof he half-turned. "The World-President," he said, quietly, "waiting for us on the roof."

That roof's flat expanse was just beneath us, covered itself with other great crystal-like gleaming fliers, but with a clear space at its center where once had stood our space-flier's framework. There was no framework there now, but smoothly I brought the flier down upon that space, down to the roof, poised it a moment a foot above it, and then let it sink to the roof's surface and opened a half-dozen of the switches before me, the throbbing of

the generators that had been enduring for so long ceasing and giving way to an unaccustomed silence that was strange to our ears. Then Marlin had turned, was opening the inner door, and in another moment the outer one had swung open also, a flood of cool, clean air rushing in upon us. Marlin leading, we stepped out, stood unsteadily for a moment on the great roof's surface beneath the brilliance of the lights that flared above it.

From beneath and above came still through the night the unceasing roar of the great crowds in the huge city's streets and the hum of its swarming, seething aircraft, and then we saw that the little group of men on the roof beside us were coming toward us, the World-President at their head. His strong, keen eyes were steady upon us as he came forward, his hands outstretched, and then he had gripped our own hands, was holding them for a moment in silence. In that moment we were all four swaying a little as we stood there, gazing about us at the far-flung lights of the great city around us, at the men before us, at the strangely-dulled stars overhead, as though never had we seen them before. When the World-President spoke, his human-sounding voice seemed strange even to our ears.

"Marlin—Randall—Whitely—Hunt—" he said. "You have come back then from your mission?"

"We've come back—from Neptune," Marlin said simply.

"The World Congress is already gathered—is waiting for you," said the other, as simply, and then with him and the officials about him we were walking toward the stair-opening in the great roof, were walking through ranks of the great looming faceted things of metal that I saw now clearly were replicas each of our own polyhedron-like space-flier!

Down through that opening we went, down stairs after stairs until we were emerging through a high door on the raised platform at the end of the great room in which the World Congress awaited us. Brilliant white light flooded that room and in it, in silent row upon row, were seated the twelve hundred members of the great Congress. As we four entered, with the World-President and his officials, there was turned instantly toward us every eye, and a tense hush of utter silence settled in which our own steps seemed loud to our ears. There were no shouts or cheering cries from the Congress' members, in that moment, for all knew that what they were to hear now from us was the word of hope or hopelessness for earth, the report of our great mission upon which rested earth's single chance for life. And as I stared across the great, silent Congress in that moment, there flashed upon the screen of my mind, strangely enough, a picture of that other silent, solemn council before which Marlin and I had stood but a few days before, that Council of Thirty of the strange Neptunians whose great synthesizing globe-mechanism had spoken to us. Then, as we stood there, the World-President was stepping forward to address the Congress.

"There is no need for me to tell you who are the four men standing here before you," he said. "Marlin—Whitely—Randall—Hunt—these four who went out to Neptune on the earth's behalf, and whom earth has tensely awaited now for weeks. I do not know, any more than you, what they found there, what chance for earth they found or failed to find. And it is that that we, the representatives of the world's peoples, now wait to hear from Marlin, the leader of this great expedition." Utter silence held all present.

AND as the World-President stepped back, Marlin, unsteady still from our unaccustomedness to earth's gravitation, and with face drawn, but eyes steady and bright, was stepping forward. Facing the great rank on rank of members of the World Congress he stood, while we others slipped into the seats behind him, facing them for a moment in tense silence as he summoned his energies to speak. In that moment, as my eyes roved across the great hall, I made out the faces of many there known to me, the face, just beneath our platform, was that of my chief at the Intelligence Bureau, Markham, the faces of many others, strange and yet familiar, all turned now toward Marlin. And then, in a voice low at first but gaining in power as he went on, Marlin was speaking to them, his words sounding out through the great room in a hushed, unnatural silence.

He began by reviewing in a few sentences the colossal peril that had threatened and was threatening us, the increased spin of the sun beneath Neptune's mighty ray that soon must result in its division and the solar system's doom. Then, with a reference to that other gathering of the World Congress at which our venture out to Neptune had been decided upon, he came to the start of that venture. While they listened in utter tenseness he told of our start, of our going out from earth first of all men into the outer void, out past the mysteries of Mars with greater and greater speed. Our onward flight through the terrible dangers of the great asteroidal belt and our narrow escapes in it, our outward rush past mighty Jupiter—these he described in his steady voice, and we felt the tenseness that held all in the great room in dead silence. He told them of what doom had nearly been ours at Saturn, of our fall toward its great rings of death and our narrow escape from them.

Then, with a little pause, he was going on, was telling of our onward flashing flight beyond Saturn out through the vast outer reaches of the solar system, out past the orbit of Uranus toward Neptune itself. In utmost suspense they listened as he told of our arrival at last at Neptune, of our amazement at finding that giant world shielded with an enclosing roof of metal, and of our greater amazement at finding that world, the colossal city that covered it, utterly dead and deserted. Low exclamations of surprise broke from his listeners then as he narrated how he and I had been surprised in the dead city of Neptune by the coming of the Neptunians in their cylinders, their attack upon and pursuit upward of Whitely and Randall in the space-flier, their capture of ourselves and their taking us from Neptune out to the moon-world of Triton. And a low wave of uncontrollable excitement swept across the great room as Marlin told those in it of the roofed and warmed world of Triton and the countless millions of Neptunians on it, and above all of the giant force-ray that was stabbing from Triton's sunward side toward the sun and loosing doom upon us!

And that excitement intensified when he told of what else we had found at Triton, of the other giant force-ray stabbing out from its other side toward a distant star of Sagittarius, of our captivity there and our learning of the Neptunian tongue, our being brought before the great Council of thirty of the Neptunian races. I saw the hundreds before us listening with abated breath as he told them that gigantic epic of the solar system's past that had been told us by the great globe-mechanism of the Council, that story of the Neptunians' past history and of the great doom of increasing cold that had driven them from Neptune to Triton and that now had caused

them to seek to split the sun itself to thwart that doom. How they had sent out toward that star in Sagittarius another great force-ray years before, to brace Triton against the back-pressure of the sun-ray and to keep it from being hurled out into the great void, how they had finally sent out the great force-ray toward the sun also, turning the sun ever faster toward the doom of all the other planets, planning to wreck the universe to save their own race. These things he told them through the hushed silence that again had replaced their stir and murmur of excitement.

But excitement held them again when he told how he and I, desperate at the doom we saw hanging thus over earth, had made our wild attempt to escape from Triton, had dared to cross its surface and had stolen a cylinder, crashing up through the great roof and out from Triton in that cylinder with their pursuit close behind us, how we had been saved from that pursuit by Whitely and Randall in the space-flier, who, although we had thought them dead, had managed to elude their own attackers by a ruse and had hovered near Triton in hopes of saving us; how in the space-flier we had fled back from Triton over Neptune and had smashed our pursuers, while we and they were over Neptune; these things, his voice deep now, he told to the hundreds of his listeners. And then, swaying a little from sheer utter weariness of body and spirit, Marlin told them how we, knowing that never alone could we halt or even reach that giant ray driving from Triton toward the sun, had headed back for earth at the utmost speed of which we were capable, had flashed back like some great messenger-meteor through the solar system to earth to carry to the peoples of earth word of what we had found, to gather the forces of earth and head back to Neptune with them for a last gallant attempt to halt that mighty ray of doom!

When Marlin's voice had ceased, when he had stepped unsteadily back from the platform's edge, his words seemed reverberating still through the hushed silence that prevailed among the twelve hundred massed members of the World Congress. Then again the World-President, his own face as set and strange now as those of the massed members before him, was stepping forward to face them.

"You have heard the report of Dr. Marlin and his three companions," he said, quietly, "and you, and I, and the peoples of earth listening now, know what situation faces us, what last necessity, even as was foreseen, has arisen before us. That giant force-ray of which Marlin told you, that colossal ray which these Neptunians are stabbing toward the sun's edge from their far moon-world of Triton, is turning the sun ever faster, as all of you know, is decreasing its rotatory period by four hours each passing day. Within hardly more than forty days it will have decreased the sun's rotatory period to that fatal period of one hour, will have increased its spin to that critical fatal speed, at which the sun must inevitably divide into a double sun, a double star, engulfing our planet, and almost all others, in fiery death in that cosmic cataclysm. This is known to you and you know, too, that it is only by halting that giant force-ray from Triton that we can save our sun, our world, from that tremendous cataclysm.

"This much we have known, indeed, and now with what knowledge these four men have brought back from their unparalleled venture out through the gulf of space to the solar system's edge, to Neptune itself, you know also what lies before us. We have, indeed, built during the absence of Marlin and his three friends that great fleet of space-fliers, which we had decided to build. Using the plans of their original space-flier and applying all our efforts toward achieving a quantity production of space-fliers on those plans, we have been able, as you know, to construct in their absence no less than five thousand space-fliers exactly like their own, space-fliers that rest now upon the roofs of New York's great buildings around us, complete now with trained crews and ready to start! The gathering of earth's forces has thus already taken place!

"And upon this great fleet of space-fliers rests now the fate of the solar system! For that fleet must go out through the solar system now to Neptune and halt the giant ray radiating from Triton's sunward side toward the sun, if the solar system is to live. What perils, what opposition that fleet will meet, Marlin has made clear to you. These Neptunians, most ancient and mighty of the solar system's peoples, are of colossal powers, such powers that they are scrupling not at splitting the sun itself! They have thousands of their great space-cylinders that can whirl through space as swiftly and as well as our own space-fliers. They have as weapons their concentrated force-rays, which we must provide for the fliers of our own fleet before it leaves. They have an ancient science and might that can produce we know not what weapons against us, and they know that our four first venturers escaped back to earth, and will be expecting now an attack from us, will resist that attack with all their powers, undoubtedly, since they are fighting for the existence of their races, their world, even as we are fighting for ours!

"Thus this great fleet of five thousand space-fliers of ours goes out to battle, to battle between the races of Neptune and Earth that must decide the fate of the solar system for all time. There can be but one fit to lead this fleet out to such battle, and that is Marlin himself, who was the first to discover this peril that hangs over us, who was one of the first to suggest a means of struggling against that peril, and who has led this first daring venture out through a thousand perils to Neptune, and back again to earth with the knowledge without which we could not act. So that it is he, with these three companions of his, Whitely and Hunt and Randall, who dared all with him and who have done for earth what he has done, as his three lieutenants, who must command this great expedition of ours which we are sending out to halt the oncoming doom, these gathered forces of all the earth!

"For it is this great fleet of space-fliers, with Marlin at its head, which alone can halt that doom now! If that fleet can win safely out through the perils of the interplanetary void to Neptune, can win to Triton's sunward side against the opposition of the Neptunians and can destroy the controls and generators of their great sun-ray, can halt that ray, the sun's spin will cease to accelerate and our planet and the other planets will have been saved. But if our fleet cannot do this, if the Neptunians prevent it from reaching the great sun-ray's source, and from halting that ray, then the sun will spin on ever faster and within two-score more days will split at last and engulf in the diverging fires of its two new suns, all the planets save Neptune. For it is this great space-fleet of ours, heading out now toward the last great battle of Earth's and Neptune's races, which alone now can prevent the accelerating speed of the sun and the consequent wrecking of our universe!"

CHAPTER XIV

An Ambush in Space

"MARS ahead and to the left—once more!"

As I uttered the words Marlin and Randall and Whitely, beside me, were gazing to the left with me. "Strange," said Randall, "it all seems, almost, as when we first went out past Mars."

Strangely similar, indeed, did it seem to all of us, the panorama that now again stretched all about us, visible through the racing space-flier's windows, as we sat in the four control-chairs before them. For ahead and away to the left gleamed again the dull-red disk of Mars, farther now from us than on our first trip out but seeming almost the same. Ahead too, and close to the right, shone mighty Jupiter, and beyond it on the left the yellow spot of Saturn once more, with far beyond it and straight ahead again the green little spark of light that was Neptune. Behind, too, the bluish light-spot of earth and the lessened fire-disk of the sun were as before, and as before the blazing stars that jeweled all the deep-black firmament about us. But behind our flier we could barely see innumerable tiny gleaming points moving forward at the same speed as ourselves through the void, keeping pace with us in regular formation, a great V-formation of which our flier was the point and that moved steadily on through space. For those tiny points, extending back and out of sight in the void behind us, were the space-fliers of that great fleet of five thousand space-fliers which our own, the flagship, was leading out through the solar system to Neptune!

For two days, now, we had been flashing with that great fleet behind us from earth, out toward the solar system's edge on our mighty expedition, and five days had passed since we had stood before the World Congress with Marlin rendering to it our report. In those intervening three days on earth we had been the center of such a whirl of hectic activity as the world had never known before—the whirl of preparations for the start of the colossal fleet. For in those three short days Marlin with the energies of a world at his bidding, had strained every nerve to complete the last preparations of the great armada of space-fliers which he, with us three as his lieutenants, was to lead out on its unprecedented flight to Neptune.

The most necessary preparation was the equipping of the five thousand space-fliers with the concentrated force-ray weapons used by the Neptunians in their space-cylinders, those concentrated rays which, instead of pushing against what they struck, tore through it with driving power. Fortunately, the production of these concentrated rays required only the addition of special smaller ray-openings beside the regular ray-openings in the sides of the space-fliers, but even so it strained the capacities of the world's workers to install in each of the space-fliers those smaller openings in the short time available.

Each of the five thousand space-fliers held a crew of eight, their operators having been trained during our absence as fast as the fliers themselves had been built. We four in our own space-flier, the flagship of the great fleet, had four additional crew-members now, four mechanic-operators who worked in shifts and tended ceaselessly the operation of the flier's various mechanisms, the great generators, and the other mechanical equipment, thus leaving Marlin and Randall and Whitely and myself free to devote all our attention to the command of the great fleet itself, though one of us retained the controls of the flier itself. Another preparation that had been made during our absence had been to equip each flier with space-walkers for its crew, and to equip each with efficient radiophone apparatus. This, while the Heaviside layer around earth would prevent it functioning from earth to space or from space to earth, would allow free communication from space-flier to space-flier while in space itself, and thus would allow Marlin and us to control with spoken orders all the great fleet we led.

Thus the last preparations had been completed and three days after our arrival at earth the great fleet of space-fliers had taken its departure, the five thousand faceted polyhedron-like fliers rising as one from the flat roofs of New York's countless gigantic buildings. Once more we had started at night, and it seemed that all of the peoples of earth had assembled in and around New York that night to speed us farewell. The vast crowds that had watched our single space-flier start out on its first trip weeks before, were as nothing to those vaster crowds that had watched the great fleet leave, since all on earth knew now what word we had brought back from Neptune and knew that in two score more days, unless this fleet was successful in its tremendous task, unless it could win through the Neptunian opposition and halt the giant sun-ray, that all on earth would perish in flaming death.

Thus surely there could have been no tenser moment in earth's history than that, when, with the World-President and the massed members of the World Congress watching again around us, our flagship had risen from the roof of the great World Government building into the night, flashing up and outward once more toward Sagittarius, toward unseen Neptune. And behind us almost instantly there had flashed up in regular timing and formation our five thousand following fliers, racing out and after us with colossal speed like ourselves and flying in that hollow triangle or V-formation behind us. That formation had been adopted so that the rays of the fliers of the fleet, driven back toward earth to push them on, would not strike against other fliers behind them, as would have been the case had our fleet moved out in a compact mass. And now for forty-eight hours our five thousand space-fliers had been hurtling outward, with our own flagship still at the apex of their formation.

And as we four sat now again in the four control-chairs, two of our mechanic-operators watching over the generators behind us and the other two asleep in their bunks, we had a somewhat different array of controls before us. Before myself were the controls of the flier itself, unchanged, with the six switches that directed its propulsion force-rays from the six openings. Marlin, though, to my right, had before him now as well as his array of astronomical instruments, the black mouthpiece and speaker of the radiophone, as well as a compact array of switch-studs by which he could speak to and hear from the various squadron-leaders in the great fleet behind us. For convenience in giving orders, the five thousand fliers of the fleet had been divided into fifty squadrons of a hundred space-fliers each, and it was to the designated leader of each squadron that Marlin gave his orders, which were then transmitted by that leader to the hundred fliers of his squadron.

Before Randall, too, to my left, were new controls, the controls of the concentrated force-rays which were to be our fleet's weapons even as such rays were the Neptunians' also, and with which our flagship had of course been

equipped. Those controls were two thick metal levers of no great size, with hand-grips at their end, one of which controlled by its position the side of the flier from which the concentrated cleaving ray was shot forth, the other controlling the slant or exact direction at which that ray was emitted. With Randall handling these, our weapons, Whitely had before him all the space-flier's remaining controls—those of the generators, air replenishers, the various recording dials that were vital to its operation, and other essential things. So that as our throbbing flier drove on now at the great fleet's head, with Marlin and Randall and Whitely and myself gazing to the left toward the nearing crimson shield of Mars, we had each before us some vital part of our great fleet's or our flier's control.

Gazing toward Mars' red disk, Marlin broke the silence. "We'll need no side-rays this time to hold us out from it," he said, and I nodded.

"No, it's far enough from us now, and the speed of our fliers will take them safely past—is taking them past now. But it's the asteroids ahead that I've been thinking of."

Marlin somberly shook his head. "There's no help for it, Hunt," he said. "We'll have to lead the fleet straight through the asteroidal belt and trust to chance that as few of our fliers as possible will be struck."

The following hours, therefore, were perhaps the most tense and terrible that ever we had experienced. For as we shot on past Mars and through the great belt of whirling asteriods, it was not possible for the five thousand space-fliers of our fleet to maneuver to avoid those asteroids. We must hold straight on in our regular formation, we knew, lest all our fliers crash one into the other, so in that formation we went steadily on through that great zone of death. And hardly had we entered it, Marlin and Randall and Whitely gazing forth as intensely as myself, than an expanding dark globe loomed suddenly before us, sweeping past us with terrifying closeness, and then as it shot past there came suddenly in the blackness of space behind us a soundless flash of fiery light, that flared for a moment and faded. The asteroid, we knew, had struck a flier close behind us!

From ahead and from either side still, as we sped on, other asteroids were rushing, following their complicated orbits as our great fleet's open triangle of space-fliers moved through them, and now again and again still behind us came other fiery flashes in quick succession, flashes of flame which each marked the instant destruction of a space-flier and all its occupants! Yet there came no word, no protest, from any of the space-fliers behind us, all were going steadily forward at unaltered speed and in unaltered formation through the great belt of whirling death. And though, within a few hours more than a score of our space-fliers had been annihilated in white-hot and soundless flashes of fire as they were struck by the hurtling asteroids, the rest had escaped unscathed, and Marlin was giving to them the cheering knowledge that we had won through the asteroidal belt and were out of its whirling death.

Thus again Jupiter loomed ahead and to our right, though closer now and greater in apparent size, and again we four were staring toward it in almost as great a wonder as formerly, as its mighty cloud-wrapped disk and attendant four big moons loomed closer. By this time, Marlin had transmitted to all the fliers behind us a brief order, and already from each of them and from our own a side force-ray was shooting toward the gigantic planet to hold us out from its terrific attraction. The V-formation in which our five thousand space-fliers flew was so slightly tilted sidewise as to allow the use of side-rays by all our fliers, and a side-ray of immense power it required indeed to hold each of us out from the mighty monarch of the solar system's planets as we sped past its huge and enigmatic sphere.

BUT still on and on through the void our mighty armada of space-fliers was racing, on toward the green spark of Neptune that slowly waxed brighter far ahead of us. That little green spot of light held our eyes, even to the exclusion of Saturn's yellow disk, expanding again to the left before us as we shot toward it also, for all our minds were centered upon Neptune and what mighty task it was that awaited us at that great world and its moon, what mighty struggle would be ours. So that it was not until Saturn's disk had expanded almost to moon-size before us, surrounded by the great rings and by its whirling moons, that we gave that planet any attention. By this time, for more than seven days our huge fleet had been speeding out through the boundless void, out through the solar system, and so it was as a certain landmark to us that Saturn appeared as we neared it, the last planet between us and our goal of Neptune. With our great fleet close behind, as we drew abreast of the huge planet's mighty sphere and colossal rings, it was intently enough that we four, gathered again in the control-chairs of our flier, and gazed toward it.

"The most dangerous planet in the solar system—Saturn," said Marlin, as we looked toward the huge world from which our side-rays now were holding us. "It was death almost for us before when we ventured too close in passing it."

"Well, we're safe enough from it this time," Whitely commented, "for since then it's moved farther to the left—is farther away from us with no danger to us now of chance meteors from its rings."

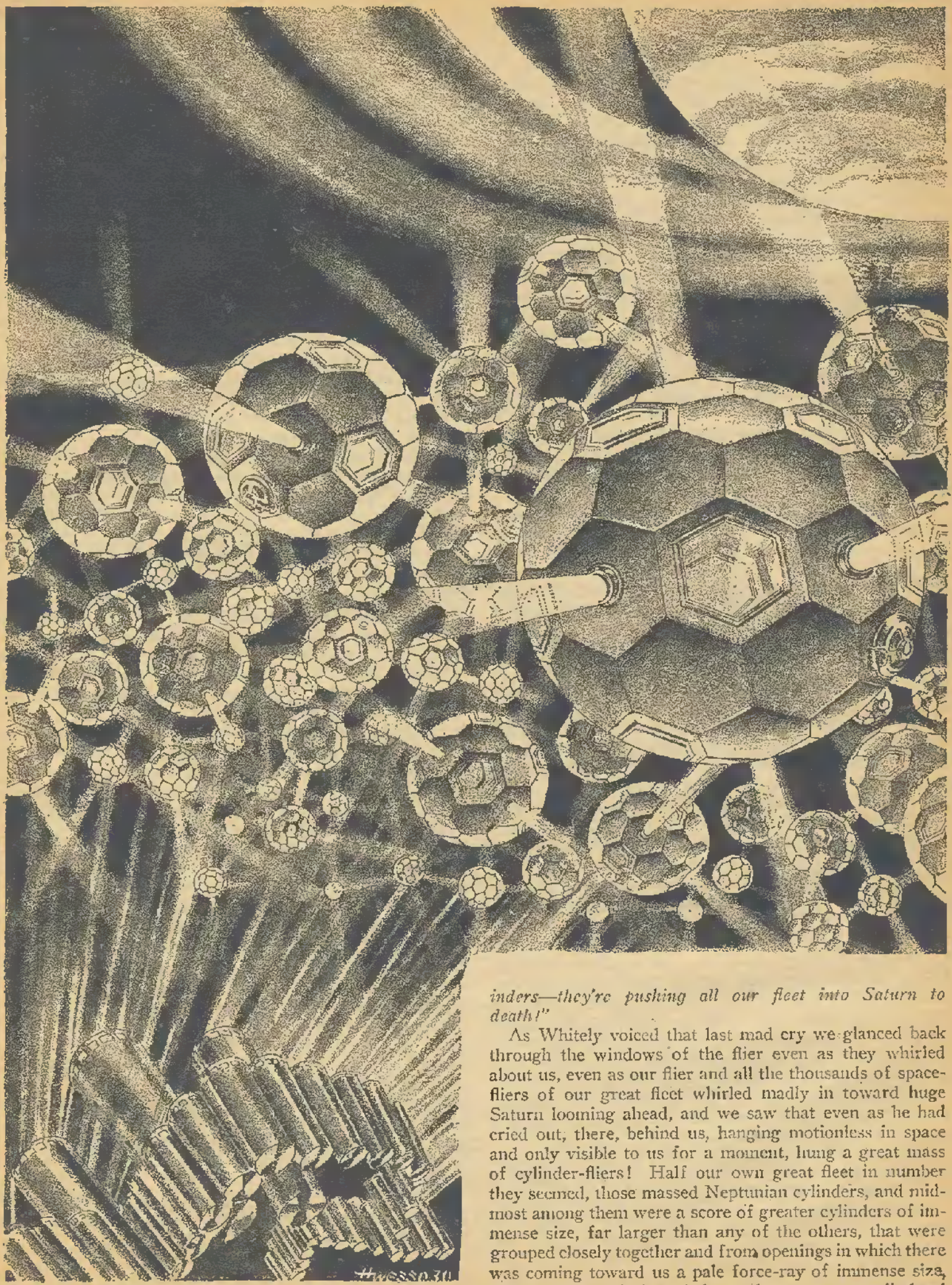
"Yes, we're safe enough from it now," Marlin admitted, "yet at the same time——"

Before Marlin could finish the words they were interrupted by a thing that chills my blood to remember even now. One moment he was speaking beside us, our space-flier flashing steadily on at its tremendous speed at the head of its great triangle-fleet, past huge Saturn to the left. The next moment there was a terrific whirling around us of our space-flier's walls, it spun for an instant with tremendous speed in space, and at the same moment then was being driven with colossal speed in a direction at right angles to that in which we had been moving, was being shot through the void toward the mighty sphere and rings and moons of huge Saturn! And even as in that awful moment it drove with sickening speed, with an acceleration terrible, toward Saturn, all its forward progress suddenly halted, reeling blindly and at unthinkable velocity toward the huge planet, I looked through the windows, and saw whirling about us, the thousands of space-fliers of our mighty fleet bunched in a great, irregular mass with us, and hurtling through the void at the same tremendous speed toward great Saturn as ourselves!

"Saturn!" cried Randall hoarsely as we whirled in that mad moment. "The controls, Hunt!—we're being shot in toward it!"

"The controls don't answer!" I shouted, my hands frantically flashing over them. "Something's driving us into Saturn—our rays can't hold us out——"

"The Neptunians! There behind us—those great cyl-



An ambush in space! They were being pushed into Saturn.

inders—they're pushing all our fleet into Saturn to death!"

As Whitely voiced that last mad cry we glanced back through the windows of the flier even as they whirled about us, even as our flier and all the thousands of space-fliers of our great fleet whirled madly in toward huge Saturn looming ahead, and we saw that even as he had cried out, there, behind us, hanging motionless in space and only visible to us for a moment, hung a great mass of cylinder-fliers! Half our own great fleet in number they seemed, those massed Neptunian cylinders, and midmost among them were a score of greater cylinders of immense size, far larger than any of the others, that were grouped closely together and from openings in which there was coming toward us a pale force-ray of immense size, visible only as it issued from those greater cylinders! And that ray it was, as was plain even in that instant,

that was pushing our fleet with colossal power in toward its death in great Saturn's maze of rings and moons! The Neptunians had come out with those great ray-generators, those greater cylinders, and with a portion of their thousands of cylinder-fliers, and had waited for us in space to the right of Saturn, knowing well that our own escape meant a great attack upon them, an effort to halt their great doom-ray! They had awaited us there and when we had come between them and Saturn, never suspecting their presence, they had loosed upon us this forceful ray that was now driving us swiftly in to death!

"An ambush!" I cried. "An ambush in space—the Neptunians are pushing us in to Saturn—our fleet can't live for minutes then!"

"Try to bring our flier out of it—up out of their ray's push, Hunt!" Marlin shouted to me, and for a moment I worked frenziedly at the controls before me, but the rays I shot forward to push against Saturn, to hold us back or push us to either side were powerless against the vast pushing ray from behind! Larger and larger great ringed Saturn loomed ahead as our disorganized fleet shot on at awful speed toward it, pushed by the vast ray, and but minutes remained before we would have crashed to death in all our fliers against the mighty planet and its whirling rings and moons! The end of our fleet and the end of earth's hope, crashed to annihilation by the Neptunian ambush that had been laid for us here in space!

The thought maddened me, and with a sudden desperate inspiration I ceased to direct our flier's rays ahead against Saturn in vain attempt to halt our reeling flash forward, but instead suddenly shot a ray back against the mass of Neptunian cylinders no longer visible in space far behind. As that powerful propelling ray struck their cylinders' mass, our reeling flier leaped forward with even greater speed toward Saturn, and as it shot forward thus faster than even the huge ray from behind alone could push it, it was slightly freed from that vast ray's pressure, and I could edge it upward a little from that great ray's path! Up—up—while Marlin and Whitely and Randall watched with white faces beside me, while our space-fliers and all the fleet's around and behind us came on at terrible velocity toward mighty Saturn that now filled the firmament before us. Up—up—and as I saw that we were winning gradually up from the great ray's path, I shouted to Marlin, heard him with his radiophone apparatus quickly order all the fleet's fliers to follow my example in an effort to win up from the great ray's pressure. Only the fliers uppermost in that ray's path, though, like our own, could hope to get clear in this way, but as we swept on, gradually our own flier and perhaps four or five hundred others out of our great mass of five thousand won thus upward until at last we burst up out of the vast ray's path and were out of its pushing pressure!

"Back to the Neptunian cylinders!" Marlin shouted into the mouthpiece before him. "Unless we can destroy the greater cylinders whose ray is pushing the rest of our fleet into Saturn, we're lost!"

And back now our flier and the five hundred others that were clear of the ray like it, were rushing, back away from Saturn, while the remaining thousands of space-fliers of our fleet, unable to get clear in that way of the vast ray's pressure, were being driven on by it with terrific speed and power toward annihilation against Saturn! We must destroy the greater cylinders that were sending forth that ray, we knew, before the mass of our fleet crashed into Saturn, and so our five hundred space-fliers, our own flagship at their head, went fast almost as light through the black gloom of space, back toward the two thousand or more Neptunian cylinder-fliers that were massed around those greater cylinders that were our object! Upward and backward we flashed, until in another moment it seemed that great mass of cylinder-fliers loomed before and beneath us in space, the score or more of greater cylinders that were pushing with their huge ray our fleet to doom. Before ever the Neptunians in those cylinders could see us we had rushed back high above them, and then, as Marlin gave a single order through the mouthpiece before him, our five hundred faceted space-fliers were diving through space upon that Neptunian mass of motionless cylinders!

Down like light we flashed upon them through the black gloom of space, and a wild exhilaration thrilled me through in that moment, as we flew downward. The immense blackness of empty space around us, the far fiery disk of the sun and the bright sparks of Jupiter and Neptune burning inward and outward from us, the vast ringed sphere of Saturn behind us—these seemed to spin slowly around our flier as with its fellows it dove down through the sheer darkness of the void toward the unsuspecting Neptunian cylinders below. Marlin was gripping the control-board's edge, staring downward with the radiophone mouthpiece close before him, Whitely at the other side gazing down with his calm eyes ablaze for once, while Randall grasped tightly, with his face set and stone-like, the two levers of our concentrated force-ray weapon, and while with my own hands I held the controls of the flier's propulsion-rays, and sent it swooping down out of the upper void now upon the Neptunians, even as the hundreds of our fliers around us swooped. Then, as those cylinders loomed greater close beneath us Randall had swung sharply the levers in his hands and as he did so there had emerged from our space-flier, and from all those about us, ray upon ray of concentrated, terrible force, slender and pencil-like rays of pale force, that crashed down with awful cleaving power through the massed cylinders beneath!

I SAW in that whirling instant score upon score of the cylinders below cloven through by those terrific slicing rays, saw a full half of the score of greater cylinders that had been our chief target break up into great fragments as our rays swept through them! For that moment it seemed that below us unharmed and wrecked cylinders were merged together in a wildly-confused mass, fragments of wreckage and disk-bodied Neptunians, slain instantly by the cold of space, and unharmed cylinders whirling together there in a great mass beneath us! In that instant we had stayed our downward rush, almost upon that great mass, had with a repelling ray shot our fliers over and beyond it, and then as we whirled upward once more, as Marlin again uttered a hoarse, swift command, we were leaping back toward the great mass of the Neptunians, leaping back with all in our flier shouting now as we drove toward the remaining greater cylinders to destroy them also!

But now, as we shot toward them, the Neptunians had rallied from the first surprise of our crashing attack down upon them, and before we could again swoop down upon them, their unharmed cylinder-fliers, still more than two thousand in number, had separated themselves from the confused wreckage of those we had destroyed and were driving boldly up toward us, to meet us! In an-

other instant they would have overwhelmed us, would have wiped us from the void with their great mass crashing over our own, their concentrated rays directed toward us, but before they could come closer Marlin had given an order and from our own racing fliers there had shot out toward the onracing Neptunian cylinder-fliers propulsion-rays that in an instant had pushed us back from their onrushing fleet, back through a great gulf of space in an instant! Before they could comprehend the maneuver, another order had sounded, and we were again leaping forward, this time on a lower level, leaping toward the half-score greater cylinders that still remained motionless where first they had been, their combined great ray still pushing our fleet on to Saturn! The cylinder-fliers above, their occupants seeing our object, darted down like falling meteors to prevent us, but were an instant too late. Before they could do so, our concentrated rays had cloven through the half-score greater cylinders and had annihilated them, their combined great ray ceasing instantly!

"The greater cylinders are all destroyed!" Whitely was saying. "We've saved our fleet from death against Saturn, at least!"

"Back toward Saturn—toward the fleet!" Marlin shouted. "We're outnumbered five to one by these Neptunian cylinders!"

For even as he cried out, the two thousand or more Neptunian cylinder-fliers, too late to save their greater cylinders, but made more fierce by the sight of their destruction, were diving down from above, with all their concentrated weapon-rays toward us! Against those outnumbering cylinders our own few hundred fliers had no chance, and even as the Neptunians whirled down on us, as Marlin shouted his order, our space-fliers were going on toward Saturn, the Neptunians leveling out instantly and raging through the void after us in close pursuit. On we shot, their questing weapon-rays taking toll now of our rearmost fliers, and though Saturn was again filling the firmament before us with his mighty cloudy-yellow disk, his colossal whirling rings and circling maze of moons, there was no sign of our fleet's main body ahead. Had we destroyed the greater cylinders too late? Had their combined great ray pushed our fleet in to death against Saturn before we could save it? It seemed so in that tense moment and then, close ahead, there loomed in black relief against Saturn's mighty heaven-filling disk, a great swarm of black dots that were whirling toward us.

"The fleet!"

As I cried the words, Marlin was giving swift orders through the mouthpiece before him, and then, even as our own few hundred fliers suddenly slowed their speed and halted, the great swarm of dots ahead had rushed up beside and around us, had taken form around us as the thousands of space-fliers of our great fleet, falling instantly into their regular formation and confronting thus the Neptunian cylinders that had been so hotly pursuing us! Those Neptunians were too late to halt their cylinder-fliers as we faced them thus so suddenly in force, our five thousand fliers opposed to theirs, hardly half our number, but they swerved as they saw us, swerved upward and attempted to race above us, raking us with their weapon-rays of concentrated force! Before they could do so, however, Marlin had uttered another order and our fleet had shot up to meet them, so that in the next moment, earth and Neptunian craft had rushed together in their two respective fleets, there beside mighty Saturn!

As the two great fleets neared each other there crossed and flashed from one to the other innumerable slender rays of concentrated force, and space-flier and cylinder-flier were being clove through and annihilated by those slicing rays as they neared one another! Almost it seemed that we must crash straight into the oncoming Neptunian cylinders, the whole firmament for the moment ahead of us being full of their onrushing mass. I saw openings in those oncoming cylinders from which gleamed light, looked inside and there as one sees things in a dream were the many disk-bodied Neptunians calmly manipulating the controls as their great mass of cylinders shot toward our greater mass of space-fliers. Cylinders and space-fliers were being annihilated in that moment by scores by the slender rays that drove across the closing gap between the fleets, and then just as we seemed on the point of crashing dead into their oncoming cylinders they had shot their propulsion-rays sidewise, had swerved aside and were rushing with our own great fleet, which had instantly swerved with them, through the void!

Side by side for the moment the Neptunian and Earth fleets flew, countless weapon-rays stabbing across the gap between them as at dizzying speed they shot through the void, and I kept our space-flier at our fleet's head, as Marlin gave his orders to the fliers behind us, Whitely swiftly opening and closing the controls of our generators to keep constant the flier's power and speed, Randall was sending our own slender and deadly rays shooting toward the opposite Neptunian cylinders like bolts of straight and half-seen lightning! For but instants it could have been that the two great fleets, our own of space-fliers and the smaller Neptunian one, whirled through the void, but eternities it seemed to me, so tense and timeless was that whirl of awful action. Soon I became aware of a mighty yellow disk that filled the firmament from top to bottom before us, toward which our racing, struggling fleets were flashing, and then I saw Whitely bending across me and shouting to Marlin through the wild whirl of this terrific battle:

"We're heading with the Neptunian fleet in to Saturn!" he was shouting. "What this battle will mean in those rings and moons——!"

"We'll keep straight with them!" Marlin cried. "They are trying to escape from us in Saturn's rings and moons, and get back to Neptune to rejoin the main Neptunian body!"

So that now as fleet and fleet rushed forward I held our own flier at our own fleet's head, racing forward with the vast whirling system of Saturn's rings and moons stretching dangerously before us. Full before us was looming greater each instant the spinning dark globe of Titan, Saturn's largest moon, and now as our two fleets rushed side by side toward it at terrific speed, stabbing still at each other from space-flier to cylinder with the concentrated weapon-rays, it seemed that inevitably in the next moment we must crash against the big moon! Seeing this, though, Marlin shouted a swift order into the mouthpiece before him, and instantly in answer to it our great fleet's mass bore sidewise against the racing mass of the Neptunian cylinders! For an instant it seemed that the two fleets were merging into each other, space-flier crashing into cylinder and slender rays coming thick, and then the smaller Neptunian fleet had given way beneath the pressure of ours, had veered sidewise so that in the following moment the two fleets were rushing past Titan's whirling sphere!

And now we were inside Titan's orbit, and as we whirled farther in just across the path of another and smaller whirling moon, I saw that Saturn's colossal rings lay edge-on close before our racing masses of craft, gigantic spinning rings of mighty meteor-masses, countless great meteor-swarms whirling there about the vast yellow planet whose sphere now was stupendous in the heavens before us. In another few moments Neptunian cylinders and space-fliers of Earth would have rushed alike into those thundering swarms of meteors, in which no craft could live for a moment. Already chance meteors were whirling through space about us as we shot on, cylinder or space-flier here and there in the two racing, grappling fleets vanishing in white-hot flashes of heat and fire as a meteor struck them. But other and more cylinders and space-fliers were vanishing in wreckage beneath the cleaving rays from either fleet, and both were racing on so intent upon our terrific struggle as to notice hardly at all the vast whirling rings before us! I heard Whitely utter a hoarse cry to Marlin as we flashed forward, heard Marlin swiftly utter an order in the mouthpiece before him, and then our fleet, and the Neptunian cylinders at almost the same instant, had shot diagonally upward and instead of crashing into the great rings' edge were slanting swiftly up over them!

And now, as Neptunians and Earth fliers drove together up over Saturn's colossal rings, the intensity of the struggle seemed to deepen to a fierceness as yet unknown. For the moment it was sheer blind battle without need of reason or command, sheer awful combat there in space above Saturn's whirling rings, with beside us the vast cloud-screened yellow sphere of Saturn itself looming gigantic, and with outside the great rings its whirling maze of moons! Cylinders and space-fliers grappled in that moment with mindless fury, and with a swiftness and skill of which I had not dreamed myself capable, I whirled our space-flier this way and that amid the swarming, boiling ruck of the giant battle, amid the grappling hordes of space-fliers and cylinders that filled the air before us, their cleaving concentrated rays slicing this way and that in swift circles of death about us! I heard Whitely laughing a little from excitement beside me as the battle reached this terrific pitch, saw Randall sending our own weapon rays this way and that with lightning-swiftness, Marlin gazing out tensely into that hell of battle that filled space about us. Struggling there above Saturn's colossal rings, ever and again Neptunian cylinder or space-flier of Earth shot too low and was caught by the whirling meteor swarms of those giant rings, annihilated instantly by them! Hundreds of cylinders and space-fliers had gone to death already, but so far the battle had been almost even despite our greater force, and seeing this Marlin cried quickly into the order-mouthpiece before him.

INSTANTLY our whirling space-fliers shot back suddenly from the wild ruck of the battle, formed instantly into a long double column of fliers with our own flier at the head, and then before the surprised Neptunians could reform their own spread-out and disorganized mass, our compact column had leaped forward and had crashed through their formless mass with a great shock, fliers and cylinders perishing in scores in that reeling crash! And then our double column had divided, pushing out to either side and thus splitting and separating the Neptunian mass of cylinders, and thus separated and inferior to us in numbers we were in the next moment leaping upon them there above Saturn's rings and sending their cylinders into wrecked fragments by the hundreds with our whirling rays! Fiercely their own rays came back upon us, as they faced us, and then they seemed to waver, to hesitate. And before we could sense their intention their remaining cylinders, depleted by scores each moment now and numbering no more than fifteen hundred, had dropped downward almost to the giant whirling rings, had formed into a swift massed formation there, and then with all the power of their propulsion-rays were speeding away, away from Saturn, out through the void toward the calm green distant spot of light that was Neptune!

"They're fleeing!" I cried, as our own space-flier whirled around in that moment. "We've beaten these, at least—they're fleeing back to Neptune!"

"Regular formation—all squadrons!" Marlin was shouting into the mouthpiece before him. "Full speed out from Saturn—after the Neptunians!"

And as our space-fliers, still over four thousand in number despite the losses of that wild combat, massed swiftly together in their V-formation and then were hurtling out from Saturn through the gulf after the fleeing cylinders, I was crying to him over the sudden waxing throb of our generators: "There's far more Neptunian cylinders than these that waited for us at Saturn here—the rest must be waiting at Neptune itself!"

He nodded, grim-faced. "The main Neptune fleet is probably waiting there for us—and must outnumber us by almost two to one. But if we can overtake these fifteen hundred cylinders before us we'll keep them, at least, from rejoining their main fleet!"

Now Saturn and its rings and moons was dwindling swiftly behind us as our great fleet shot forward again from it, out toward Neptune's steady, pale green little light-spot, and after the hundreds of cylinders fleeing before us toward it. With an acceleration that never before had we dared to risk did we leap forward through the void now, and so awful was the pressure of that acceleration upon us that even with our shock-absorbing apparatus we were crushed almost into unconsciousness by it. Steadily, though, with the last of my consciousness and strength, I held the space-flier's speed and course onward, while close behind us there shot after us with the same terrific acceleration, the fliers of our own fleet. We knew, though, that the Neptunians were fleeing toward their great world at a speed and acceleration as great as ours, for we were not gaining upon them. Their massed hundreds of cylinders, indeed, were not visible to us in the great void ahead except by means of our telescope, but with it we could keep them in view and could check their progress and ours out through the great gulf toward the solar system's edge.

Out—out—for hour upon hour we throbbed through the void after those fleeing Neptunian cylinders, out once again toward great Neptune and toward the last mighty battle that was to be ours there. For well we knew that the two thousand and more Neptunian cylinders that had waited for us there at Saturn, that had laid that great ambush in space for us there and then had battled us so fiercely over Saturn, were but a portion of the Neptunian main fleet of cylinders, sent out to delay, and if possible, to destroy us. That great main body of their cylinders, we knew, must number almost double as many craft as our own, and undoubtedly was aware of our coming and was waiting for us at Neptune or near it. And it was the great main body of the Neptunian cylinders that we must

overcome, I knew, before ever we could hope to get to Triton and halt there the giant force-ray that was turning the sun on toward the doom of the solar system. And well we knew, too, that in the interval the Neptunians had had time to build many more cylinders, to make their great fleet even greater, and that whatever mighty weapons they had devised in that time we now must face.

So that as our great fleet of space-fliers, holding to its regular formation, flashed on and on and on through the great gulf of space, on out through the outer vast reaches of the solar system toward its outermost planet, our every effort was bent upon overtaking the fleeing Neptunians before us and annihilating them before they could rejoin the main body. At the same colossal speed as ourselves they were fleeing from before us, on toward Neptune's tiny green disk far ahead, and though we held steady in our pursuit after them, we could not lessen the gap between us. Hour passed into hour and day into changeless day thus as we throbbed on in that tremendous pursuit, hours and days that we could not measure, all things seeming timeless now as our great fleet flashed on in this terrific pursuit. At maximum speed, at millions of miles an hour, the Neptunians and ourselves were hurtling on, yet they kept out of reach ahead of us, as Neptune grew larger ahead. And now that mighty pursuit of ours had become so strange and unreal and dream-like that it was as men in a dream that we watched and slept and watched in our space-fliers as earth's brave fleet shot on through the last reaches of the solar system toward its edge.

Timeless indeed seemed the day on day, the hour on hour, of that daring pursuit of our fleeing enemies out from Saturn toward great Neptune, but now we knew that that pursuit had begun to draw to an end, since Neptune's disk was steadily enlarging before us and we had begun slowly to draw closer to the fleeing cylinders! Closer and closer our fleet, our own foremost space-flier, was coming to those fleeing fifteen hundred cylinders, and the interval of hours and days of pursuit out from the wild combat at Saturn seemed as though it had not existed, so tense once more we became as we drew nearer to the Neptunians before us. At last, with Neptune's pale green disk and the bright little spot of Triton above and behind it within hours of us, we had come so close to the fleeing cylinders that their mass, hurtling on in a cone-like formation, was clearly visible to our unaided eyes in the void ahead. And by this time, in every space-flier of our onrushing fleet, its occupants were waiting impatiently for the moment when we would be near enough to loose our concentrated weapon-rays on the fleeing craft ahead.

"We'll overtake them before they reach Neptune!" Marlin declared, gazing intently ahead toward the gleaming points that were the fleeing cylinders far ahead. "Within hours now we'll be up to them!"

"Well enough for us that we can do so, too!" Whitely commented. "For if they rejoined their main body, the odds against us might be overpowering!"

And now as pursuers and pursued rushed nearer and nearer toward mighty Neptune's great pale-green sphere, they were also nearing each other, our onleaping four thousand space-fliers drawing closer and closer toward those fleeing fifteen hundred cylinders, though they were a great distance from us. Beside me Randall's hands were resting on the weapon-ray controls, and as we came closer still to the fleeing Neptunians, I saw Marlin leaning toward the mouthpiece, preparing to give his order to the great fleet behind us. Closer—closer—we could clearly make out now the massed fleeing cylinders far in the void ahead—already almost within accurate ray-range, a swarm of black dots against Neptune's cloudy green disk ahead. And as we came thus close Marlin leaned to voice his order, to spread the space-fliers of our fleet into a broad firing-formation and send their rays stabbing ahead. But that order was never uttered, for at that moment Whitely uttered a sharp cry, and we saw that the racing mass of cylinders ahead was suddenly *slowing!*

With unprecedented quickness its speed was decreasing before us and in moments more we would have crashed into those slowing cylinders had not Marlin's voice snapped a quick order that slowed instantly all the fliers of our fleet likewise. Fearful of some trick, slowing thus, we gazed intently ahead in that moment and then all of us had cried out together as we saw, beyond that swarm of black dots that were the slowing fifteen hundred Neptunian cylinders before us, other black dots that showed against great Neptune's disk also, which loomed great now in the heavens ahead! Other black dots, an immense swarm of them, that we knew were other cylinders, an immense fleet of them, rushing out from Neptune toward the fifteen hundred before us and toward ourselves! And then as in moments more the fifteen hundred cylinders before us slowed and stopped in space even as we had slowed, we saw sweeping from behind them, from great Neptune, those other cylinders, forming with them, there in space, a colossal semi-circular mass of fully eight thousand Neptunian cylinders in all, that faced our own four thousand or more space-fliers there in the void! It was the giant assembled Neptunian fleet, gathered here outside their world to face our own fleet, in that great struggle in which Earth and Neptune were to come now at last to death-grips for the life or death of the solar system!

CHAPTER XV

"You of Neptune or We of Earth!"

"COLUMN formation—all squadrons full speed ahead!"

It was Marlin's voice that shouted that swift order in the next instant, and then, even as the gigantic semi-circle of the Neptunian fleet was leaping through the void toward us, our four thousand and odd space-fliers, outnumbered almost by two to one by the cylinders massed ahead, had shifted like lightning from their great V-formation to one of a long double column once more, and no sooner had its squadrons taken that new formation than the column slanted slightly to allow the free use of their propulsion-rays. They were flashing forward now like an enormous spear cast toward the curving front of the giant Neptunian fleet! For it was Marlin's intention to meet that outnumbering mass of cylinders by splitting it with a column as we had done over Saturn to our enemies, and then engaging separately the parts of the disorganized mass. So that now, even as the great half-circle of the Neptunian cylinders whirled through the void to overwhelm us, we had formed that long, double column and were dashing straight at them!

Holding the controls of our space-flier steady in that moment, I was aware for an instant of a sense of the utter strangeness of all the wild scene about me—of our space-flier's interior with Marlin and Randall and Whitely

crouched in their chairs beside me, of the great column of polyhedron-like, gleaming, faceted, space-fliers that came forward through the black gulf of star-sown space behind us, of the oncoming giant line of the Neptunian cylinders flashing toward us in turn, and of the immense green disk of mighty Neptune looming in the black vault behind them. All seemed for the moment the panorama of some strange nightmare stretched about me, but that momentary sensation that had gripped me so often in our wild rush through the solar system vanished in the next instant as stern reality loomed before us. There were the mighty curving line of gleaming Neptunian cylinders through which in the next split-second our great column must crash! I braced myself mentally for that vast crash that must almost inevitably mean death for the foremost of our space-fliers; I was aware as we drove upon the onrushing Neptunian line, that now unthinkable storms of deadly concentrated rays were raging from fleet to fleet; and then suddenly, at the very instant that we thought to crash into their great approaching line, that line opened swiftly before us to allow our great column to rush unharmed through it!

So astounded were we by that unlooked-for maneuver on the part of the Neptunians, that before we could check our speed, we were through, had shot in our entire column through that opening in their semi-circle, which instantly closed again behind us. And as it did so, there rushed toward each other the open ends of their semi-circle, thus closing that circle even as we rushed into it. Our fleet was held enclosed within the circle of their own! And then, from all those thousands of Neptunian cylinders that surrounded us, there were stabbing at us in countless number slender shafts of concentrated force, countless pencil-like weapon-rays that instantly clove through hundreds of our gathered space-fliers and that strewed space thick about us with their wreckage, even as we sought in vain to answer that terrible rain of deadly rays!

"Trapped!" Whitely was shouting. "They've trapped us inside their circle—are destroying us!"

For, though our own rays were fiercely springing forth and striking cylinder after cylinder of the vast fleet that had gathered about us, that fleet so outnumbered us and had such advantage of position, that it was decimating us in short order. Our space-fliers had broken from their column-formation now, and in a loose, disorganized mass were drifting at the center of that great ring of death which the Neptunians had formed about us. Swiftly our fliers were going into wreckage and death beneath the terrific storm of rays from all around us, and then Marlin's voice was flaring as he shouted an order into his mouthpiece.

"All space-fliers mass together," he cried, "and turn all your propulsion-rays outward!"

"You're going to—" Whitely began, but Marlin cut him short.

"We're going to break up the Neptunians' circle in the only way it can be broken up!" he cried.

As his order sounded the thousands of our space-fliers were obeying it, were massing compactly together at the center of the Neptunians' mighty circle. Thus massed, they presented for the moment a perfect target for our enemies' rays, and for a moment those rays stabbed thick toward us from all sides. In the next moment our massed space-fliers were shooting their great propulsion-rays outward, outward in all directions around us, outward toward the Neptunians' encircling ring! As those rays shot out, they pressed with terrific power against that ring of cylinders about us, and since our own fliers were massed together and thus braced against each other, it was not they that moved but the cylinders, their great ring instantly broken up, disintegrated, as those cylinders were hurled out into the void from us by the pushing power of our great propulsion-rays! For the moment they were broken up completely, their formation entirely shattered, and before they could reform, there had come another order from Marlin and in a compact formation ourselves, our space-fliers were leaping upon their shattered masses!

To right and left, like light, drove the deadly weapon-rays of our massed space-fliers as we seized the opportunity and leaped upon the Neptunians. Ample was the revenge we had upon them in that moment, since the concentrated rays tore through and wrecked hundreds of their own cylinders as we sprang upon them! Fleeing from before us for the moment, flashing away toward giant Neptune's tremendous green disk ahead, they strove to reform while we leaped after them and harried them with every weapon-ray which our space-fliers could emit. Swiftly, though, even as they rushed onward before us, the Neptunian cylinders were drawing together into a great mass again, into a great column-like formation, and as our own column-mass drove beside and after them with weapon-rays stabbing, their resistance abruptly stiffened, and they were racing in close formation once more beside our own mighty fleet, grappling once more with it in space as both rushed toward great Neptune. But we had struck a mighty blow at their disorganized masses in the moment of our opportunity. Fully two thousand of their cylinders had been swept to death by our rays before they had been able to mass again, and now but six thousand or less cylinders remained, racing ahead with our own four thousand or less fliers!

The great green sphere of Neptune was looming colossal ahead and slightly beneath our two oncoming fleets, with behind and above it the bright little disk of Triton. It was toward Triton even in that wild moment that all of us were gazing, toward the source of the giant sun-ray that we must, somehow, halt. But now the battle around us had become so furious that we could spare no thought to aught else, since the two mighty fleets, stabbing ceaselessly at each other with their slender rays as they slowed their flashing progress forward, were rushing into the outer reaches of the atmosphere of huge Neptune! Its air was roaring about our whirling space-fliers as we shot through it, but as we shot on we saw that the Neptunian cylinders were going into annihilation swifter far than were our fliers! For they had formed and were racing beside us in their half-circle formation, while our own fliers at Marlin's command had leaped forward in a long column that could concentrate all its fire of rays upon the side of the Neptunian formation nearest us! And though slender rays tore lightning-like through fliers here and there across our own column, we saw that their cylinders beneath our fire were being wrecked in scores, in hundreds! In that vast running fight we were fast evening the odds against us!

Marlin's eyes were gleaming with excitement as we saw the Neptunians thus falling beside us under our concentrated fire of rays, and Randall and Whitely and I were almost beside ourselves with exultation. Faster were falling the Neptunian cylinders beneath our rain of rays, the rays of their farther cylinders being held from us by their own cylinders in their fatal formation. Already, as

we thundered through the mists of mighty Neptune and low over its gleaming surface, we saw that the Neptunian cylinders had been reduced by that deadly fire of ours to hardly more than three thousand, to hardly more than our own fleet of fliers, which had itself lost its hundreds in that vast running battle. As our rays tore into and through their shaken mass hundreds upon hudreds of their cylinders had been cloven through, had been reduced to whirling wreckage, and we had evened the odds in our raging battle at last!

Even as we cried out in triumph, the Neptunians must have seen that to continue in that running fight longer was suicidal for them. They could not change formation during that flight without exposing themselves to worse peril, so in desperation they did a completely unexpected thing. Their enormous mass of cylinders, battered out of its half-circle formation by our terrific fire of rays, suddenly swerved in toward our own fleet as the two great armadas rushed forward above Neptune, and then that Neptunian fleet of cylinders had crashed obliquely with immense power into our own space-flier fleet! The next instant it had so merged with it that the two fleets ceased instantly to exist as such and for the moment became one colossal, swaying, reeling mass of cylinders and space-fliers in utter merged confusion, striking and soaring and smashing each other!

As that great cylinder-armada crashed thus into our own it had seemed to me that the air all around us was filled in that instant with colliding space-fliers and cylinders, and with a hell of slender pale and deadly concentrated rays that raged thick in whirling death about us! I saw before us two onrushing cylinders, whirled the flier up to avoid that imminent collision, and then as they passed beneath us, saw Randall send our rays driving down and cleaving through them, saw them whirl in wreckage into which a battling cylinder and faceted space-flier had crashed themselves in the next instant! I heard Whitely's shout of alarm in the next split-second, instinctively flung the flier sidewise through the boiling ruck of the battle, just in time to escape a pair of stabbing rays from a cylinder beneath, and then saw those rays stab on up and strike another cylinder and destroy it! And even as I whirled the flier sidewise, Randall was driving our rays to right and left against other cylinders rushing upon us!

THE air about us seemed filled in that moment with a single wildly-swirling mass of cylinders and space-fliers, grappling with each other there in countless individual combats inextricably intermixed, their weapon-rays going out in destruction through the craft that whirled upon them, their propulsion-rays driving the ships about them crazily to right and left! With inconceivable fury cylinders and fliers soared and fought and fell above great Neptune's roof, the air filled with falling wreckage, our great battle reaching now an undreamed-of phase of intensity, as gleaming cylinders and faceted ball-like space-fliers were annihilated alike by hundreds! That giant merged combat of the two fleets had in minutes taken toll of half the force of each, and I wondered dimly even as I whirled the flier up and back through the wild, annihilating battle how either men of earth or disk-bodied Neptunians could cling to a battle of such suicidal nature! Then suddenly from Marlin had come a hoarse exclamation, and I saw in that instant all the Neptunian cylinders intermixed with our space-fliers rising upward, as though in answer to a single command!

"Up!" cried Marlin. "The Neptunians are over us! They're going to ——!"

But before he could finish the sentence, before our space-fliers could whirl upward in answer to his command, from the Neptunian cylinders massed above us had shot down upon us innumerable powerful propulsion-rays, rays that struck scores, hundreds, of our space-fliers and drove them down with terrific force to crash against the metal roof of Neptune beneath us! They were repeating the maneuver by which we four had escaped from our pursuers over Neptune weeks before, were driving our fliers down to crashing death in hordes! Instantly as Marlin shouted into the order-mouthpiece, our fliers leaped forward, to escape from that death that smote us from above, but as we drove forward in our column formations again, they went on above us, were with their powerful propulsion-rays driving us down to death in scores even as with those rays they prevented us from rising to meet them! We were being quickly destroyed now, and as we saw it, as our column flashed on with the Neptunian cylinders massing in another column above and driving our fliers down by scores, we saw that not much longer could that unequal battle continue! Then abruptly Marlin pointed ahead and downward to Neptune's mighty roof beneath us, was crying an order to us and the fliers behind and about us.

"That opening!" he cried. "Down through it—down beneath the roof! It's our one chance to escape them!"

I caught my breath at that cry of his, for I saw that he was pointing down toward one of the great circular openings in Neptune's roof, openings that were set in it here and there, all being open now as when we had first explored Neptune's mysteries. To flash down beneath the roof through that opening was our one chance of escape from the relentless smiting death above. I saw it, too, so the next instant our own flier and all the long column behind us were diving downward at a dizzying angle toward that great circular opening; and in the next moment before the Neptunian cylinders above could fathom our purpose, we had passed through that opening and were racing forward beneath the great roof! In an instant, though, the Neptunian cylinders had followed in their long column and were racing after us, through the dim Neptunian day above the dead and lifeless surface of the great compartment-city that covered all of Neptune!

On we flashed, with the Neptunian column some distance behind, numbering now some half-thousand more in cylinders than our own bare thousand space-fliers. On until above us we saw another similar opening in the great roof, and then at Marlin's quick order our narrow, long column of fliers were slanting up toward it, through it. And then, outside of the great roof once more, Marlin gave a swift order that revealed to me the purpose of his strategy. For at that order our fleet checked its upward rush and bent its long column lightning-like around to form a great circle, a circle hovering there around and above the great circular opening in the roof through which we had just emerged. And in the next moment, as the Neptunian column flashed up through that opening likewise in hot pursuit of us, never suspecting us of waiting there for it, from all the fliers of our great circle there had radiated toward them storm on storm of deadly concentrated rays, rays that smote them with blinding shock as their column rushed upward and that crashed through hundreds of their upflashing cylinders even as they burst up through the opening, before ever they could catch sight of us around them! In those seconds of dazing

surprise there was no chance for them to recoil, and their column of cylinders, as if too astounded for the moment to answer with a single ray, was flashing up from the opening through a hurricane of rays that in that moment was annihilating their cylinders by hundreds! But a scant three or four hundred cylinders of those that ran upward through that gauntlet of death escaped it, and these swirled for a moment in stunned confusion above us, and then were without formation racing away from us over Neptune's surface, racing away toward the gleaming disk of Triton!

"Beaten!" I cried, as our own space-fliers whirled up now after the fleeing cylinders. "They're beaten—they're fleeing back to Triton!"

"The giant ray!" Whitely was shouting, as we thundered forward. "We've still more than a thousand fliers left, and if we can get now to that great sun-ray——!"

"Hold steady after them!" Marlin cried. "We've fought our way this far, and we've got now to get to that ray and halt it!"

Now out over Neptune's surface, out through its mists and outer atmosphere again, the cylinders ahead were roaring at utmost speed, almost leaping in a confused and disorganized mass, the remnants of that mighty fleet that had come out to meet us outside Neptune, toward their moon-world of Triton, whose disk gleamed bright ahead. A thrill of pride even in our wild excitement shot through me as we thundered on in pursuit of those fleeing cylinders. For whatever else that day might hold for us, whether or not we were able to halt that giant ray on Triton's sunward side that was reaching out to the sun and turning it ever faster, we men of earth had at least proved our fighting ability to the solar system for all time, had come out to the solar system's edge and had shattered there the mighty armada of the Neptunians' ancient and mighty race! And now as we flashed on in swift pursuit of the fleeing survivors of that armada toward Triton, confidence and hope were strengthening in us each moment, for with the Neptunians' great fleet shattered what could hold us back from the shattering and halting of the giant sun-ray and its mechanism?

On—on—and now we were rushing after the fleeing cylinders out of Neptune's atmosphere and into the airless void again, with Triton growing each moment more bright and big as giant Neptune fell behind us. Across the gulf from Neptune to its moon we sped, after those cylinders, with utmost acceleration and speed, and swiftly we drew closer to the Neptunians flying before us, and swiftly too drew closer to the gleaming sphere of Triton. And as it grew larger before us, as we pursued the cylinders in toward it, we all cried out as we followed with our eyes at the sunward side of it the giant pale beam, hardly visible, of the colossal force-ray acting on the sun, that mighty ray that was turning the sun ever faster to the doom of the solar system! We could make out that gigantic beam, leaping out into space toward the distant fire-disk of the sun, and could make out also in that moment a great number of great humped dark shapes gathered on Triton's roof around the great pit of the sun-ray. As our eyes shifted to Triton's other edge we could discern the other giant force-ray, which reached out toward the distant star in Sagittarius and by bracing Triton with its pressure kept the moon-world from being hurled out into space by the sun-ray's pressure. Around this other ray's pit, too, were a few of the strange great humped or domed dark shapes, but in that moment we gave them small attention, for the cylinders that had been fleeing from before us straight toward the great sun-ray's giant beam, had abruptly slowed, stopped, as they rushed into Triton's atmosphere, and had turned desperately to face us!

IT was a wild, fierce attempt on their part to hold us even to the last from their great ray, and as their three or four hundred cylinders massed so suddenly before us and faced us, our own column was leaping upon them with all the impetus of our thousand and more space-fliers! The next moment cylinder and space-flier were reeling in a wild last struggle there high in Triton's atmosphere, high above the pit of the giant sun-ray, with the mighty pale beam of that ray passing up and out toward the sun and still beside us! Like demons the Neptunians were fighting now, but we were wrought up to the fiercest pitch battle ourselves, and as Marlin gave his orders, we were swooping upon them with insensate fury, cylinder and space-flier crashing together there above Triton or falling beneath the slicing sweeps of the weapon-rays that again raged thick around us! Faster, ever faster, fell the outnumbered cylinders before our wild attack, until at last but a score were left—a dozen—a half-dozen—and then those, too, were gone, the last of the Neptunians' mighty fleet of cylinders annihilated! And now as from our hovering space-fliers, still over a thousand in number, there came muffled, wild cheers, our eyes were shifting downward, down to the great pit from which the sun-ray sprang, down to the twenty control-boxes in the sides of that pit!

"Down to the pit—down to the controls!" Marlin was shouting over the wild uproar in our and the other fliers. "Every one of those control-boxes must be destroyed before we can halt the ray!"

"We'll halt the great ray now!" I cried to him, as our space-fliers swooped downward now toward the giant pit of the ray. "We've wiped out their last forces and we can——"

"But look—those great domes around the pit below!" It was Whitely's hoarse shout that broke in upon me. "They're great domed forts—*great domed forts guarding the giant sun-ray's pit and controls!*"

For as we shot down toward the great pit of the mighty force-ray we had seen clearly now the scores of giant domed, humped shapes on Triton's roof around that pit, which we had vaguely discerned from high above. And they were, as Whitely cried to us, great forts! Giant domed forts of inconceivably thick and strong metal, each hundreds of feet in height, with openings here and there in them from which countless deadly weapon-rays could be emitted. And these great domed forts, over a hundred in number, were *moving*, were wheeling this way and that smoothly and swiftly on Triton's roof, were circling slowly on that roof about the pit of the giant sun-ray, guarding that pit and the control-boxes in its walls! Even as we heard Whitely's cry in that moment, as we flashed down toward them, we realized that the Neptunians had constructed those mighty moving forts of metal to guard their great force-ray's controls from our attack, placing more than a hundred of them around the pit of the great sun-ray, and a half-score of them, as we had perceived, around the pit of the other great force-ray on Triton's other side! And then, in the moment that Whitely cried out and that we saw those great forts moving like smooth-gliding mountains of metal beneath us, there had rained upward from them toward us a staggering, withering storm of concentrated force-rays!

Reeling, staggering, falling, our fleet spun in crazy disorder in the next moment as that terrific fire from beneath decimated us! And though in the next instant Marlin's voice rang steel-clear with an order, though in answer to that order our own concentrated rays radiated down madly toward those gliding mountain-like domed forts beneath us, it seemed that our rays had no effect upon them! For so stupendous in thickness and strength were those giant domed forts of metal, that instead of cleaving through them our rays could do no more than crumple and dent somewhat their smooth outer surfaces! They were invulnerable, almost, to our attack, and though one of them was crumpled into twisted metal by scores of our rays happening to converge upon it, the others were almost unharmed and were raking us with a terrible, annihilating rain of rays as we shot down over them!

Down and down—and then as I shot our space-flier down foremost of our mass of fliers through that wild tornado of deadly rays, I saw the great pit's opening looming full beneath us, the giant pale beam coming up from that opening, the twenty vital control-boxes set at equal intervals around its walls! Toward one of those control-boxes our own flier was whirling beneath my hands, and then Randall drove out like light our piercing weapon-rays toward that control-box, clove through and wrecked it instantly! But it was but one of twenty, and in the next instant our space-fliers, unable longer to withstand that terrific fire of rays from the gathering domed forts around the pit, were staggering upward, none other of our fliers having progressed as far down as ours, and none other of the twenty control-boxes being destroyed! And as our space-fliers reeled thus upward, unable to reach the control-boxes in the pit against the awful fire of the gathered domed forts about it, we saw that more than a hundred of our fliers had fallen beneath the terrific fire of rays from the forts in our mad rush downward!

"Those twenty control-boxes!" Marlin was crying. "We've got to destroy every one before the sun-ray will halt!"

"But we can't with these giant moving forts against us!" Whitely cried. "They're wiping us out—they will have destroyed us in minutes!"

"We'll hold it to the end, then!" Marlin shouted. "We've fought our way out through the solar system to this great ray, and unless we halt it now it means death for the solar system in a score more days! Down again to the attack!"

And down—down—down—like striking, rushing meteors our hundreds of space-fliers shot, to one side of the giant beam, down with the great domed forts beneath swiftly flashing over Triton's roof to mass beneath us at the pit's side. Through the little window-openings in those forts we saw the disk-bodied Neptunians inside, and knew that beneath the great roof of Triton also were swarming the millions upon countless millions of all the Neptunian races, all the disk-bodied monsters in their great compartment-city, who, with this great ray, were turning our sun faster and faster to divide in a score more days and doom the solar system! And with a desperation born of that thought we shot down once more, down with the hell of rays from the great domed forts again raging up around us and taking toll of our fliers as we shot over them, curving back upward once more, and stabbing again toward the control-boxes in the pit's wall our weapon-rays as we reached that curve's lowest point! But this time, though the great forts took toll again of scores of our fliers as we shot down over them and up again, over the pit and up again, our rays were so imperfectly aimed, that no control-box was destroyed this time!

Upward we swirled and then again, with a persistence more insensate than human, were racing downward again in a terrific swoop over the pit of the great ray! Again the deadly rays of the surrounding hundred domed forts crashed through our down-swooping fliers, sending masses of them again into whirling wreckage, while as we swooped down over the pit and upward again in that lightning-like rush through death we saw that our rays had missed once more and that none of the control-boxes had this time been destroyed by them! And as we reeled upward again over the great pit, from over the giant domed forts, we saw that but a few more than five hundred space-fliers remained to us of the thousand and more with which we had first flashed downward! In three downward swoops only, in three lightning-like moments of attack, the giant invulnerable forts beneath had annihilated more than half our force, and we had succeeded in destroying but a single one of the twenty control-boxes!

"The end!" cried Whitely. "The end of our chance to halt the great sun-ray!"

"The end of our great fight through the solar system—the end of earth's and the solar system's last chance!"

For it was the end! Even as we cried out thus we knew it, beyond shadow of doubt, as the shattered mass of our remaining space-fliers reeled high above Triton's roof, high above the great pit of the ray and the colossal moving domed forts that guarded it! Marlin—Whitely—Randall—they were swaying in that moment, the knowledge of doom plain upon their faces as upon mine! Another great swoop downward and those giant, almost invulnerable moving forts would blast us entirely from the air with their storms of rays! All of the nineteen remaining controls below must be destroyed to halt the mighty sun-ray, and before we could destroy even one of them, we would be annihilated! The giant ray beside us would turn the sun on ever faster, turn it on until in a score more days the sun would divide at last into a double star and engulf its planets in its diverging fires—all save Neptune! And as we came thus to the end at last of our superhuman struggle to halt the solar system's doom there was coming up to us from beneath the great roof of Triton a vast, rolling muffled shouting of triumphant Neptunians, of all the Neptunian hordes upon Triton who saw as we did that for us the end had come!

"But if it's the end, we'll meet it trying!" Randall cried. "One more swoop downward—we can die that way at least——!"

BUT from Marlin, who stood with crimson face and blazing eyes, there came a mad shout. "The end—*no!*" he cried. *"There's still a chance for us—to halt the other ray—the ray on Triton's outward side!"*

The other ray! The other giant force-ray that went from Triton's outward side, its dark side, into the gulf of interstellar space toward that far star in Sagittarius, the other mighty ray that braced Triton against the great sun-ray's pressure and that kept that sun-ray's pressure from hurling Triton out into the great interstellar void! The other ray—and if it were halted—then Triton—I felt my mind reeling as the stupendous meaning of Marlin's mad shout came home to it! The other ray—guarded by

only a half-score of the giant moving domed forts, instead of the hundred beneath us—and then Marlin's voice was tearing across the throbbing, rushing din to my ears and instinctively I had obeyed his order, had shot our space-flier forward at immense speed even as there rushed forward beside us our five hundred and more remaining fliers! I whirled it away from the great pit of the giant sun-ray and over Triton's roof at lightning speed toward its dark side, toward the other giant ray that reached out into interstellar space from that dark side!

And as we rushed thus away with reeling speed, we heard the mighty thundering cheers of the Neptunian millions beneath the great roof changing to wild cries of alarm, saw the hundred great domed forts around the sun-ray moving over Triton's roof after us with immense speed, themselves, gliding at utmost velocity on around that roof's smooth surface after us in sudden wild alarm! But, more slow by a little than our massed space-fliers that split the air above Triton they dropped behind us even as we shot forward, even as that colossal roar of rising alarm rolled across Triton's surface beneath the great roof! On—on—like rushing meteors massed close together our space-fliers flashed now, toward Triton's dark side around its surface, and then were whirling around that dark side, were whirling straight toward the colossal other beam, the giant other force-ray that stabbed out opposite from the sun-ray, that stabbed out toward Sagittarius' bright star and by its pressure towards that star kept Triton braced against the sun-ray's outward pressure! Marlin was shouting, screaming an order as we flashed downward, and we caught sight for a moment of the half-score domed forts, left as guards of this other ray's great pit and controls, and then like comets of metal our fliers were thundering down upon them!

Slender beams sprang quick to meet us from those ten great domed forts, but though those beams drove crashingly upward upon us in narrow rays of death, it was not toward the domed forts that we were rushing, but toward the twenty control-boxes set in the wall of the giant pit from which this other mighty ray issued! Through the wildly-whirling beams that sliced the air about us we flashed downward, and then as the pit's walls loomed close ahead, as beside us, almost thundered into by us, loomed the pale, gigantic beam, we saw the out-jutting control-boxes full before us, set around the pit's great wall, and the beams of our massed space-fliers were driving thick toward them! *Crash!—crash!—crash!*—and we were shouting crazily as we saw half the twenty control-boxes smashing inward, annihilated by our first wild rush! And then as we spun around there in the pit, around the giant beam to annihilate the other control-boxes, the rays of the ten domed forts sweeping insanely about us, Whitely cried out hoarsely and pointed away across Triton's metal roof-surface toward the hundred mighty shapes of the great domed forts rushing to the defense of this other ray, rushing to annihilate us!

"The control-boxes!" Marlin cried. *"The last control-boxes!"*

And even as he cried that, even as with their utmost immense speed the hundred colossal domed forts of metal rushed over Triton's metal roof to join with the outnumbered half-score beside us, to annihilate us with one combined mighty blast of their countless rays, our massed space-fliers had whirled around the great pit, around the mighty ray, and were driving toward the remaining control-boxes in its wall with all their weapon-rays stabbing ahead! *Crash!—crash!*—and those remaining control-boxes were crumpling, crashing, beneath our rays, with but a single control-box in the wall remaining intact in the next instant, a single one that sufficed still to keep the giant ray beside us going upward, outward, though! And even as we gathered, whirled to rush upon it also, the colossal rushing domed forts had appeared at the pit's edge around and above us, seeming to pause for a split-second before their combined countless rays came down to annihilate us! But in that instant, when the giant domed forts paused above us, Randall had whirled back the ray-switches in his hands, and from our space-flier and from a score more around us in the same instant there had flashed toward that last control-box a converging score or more of driving rays that instantly had crashed through and had annihilated that last control! And as that last control-box of all the giant ray's twenty was thus destroyed, there came what seemed a blinding flash of light at the great ray-mechanism far in the mighty pit beneath us, and then the giant pale force-ray that radiated upward and outward from that mechanism had abruptly snapped out beside us!

There was a pause, a silence of a single instant, a pause in which all the universe about us seemed holding its breath, in which our rushing space-fliers were whirling up out of the great pit, in which the giant domed forts at the great pit's edge beneath us seemed held in an enchantment of stupefaction. And then as our massed space-fliers whirled thus upward over Triton's surface, as Marlin and Randall and Whitely stared downward, swaying, we saw the great metal-roofed world of Triton reeling beneath us as though from some colossal shock, saw it rushing outward from beneath us with colossal, unthinkable speed! Saw it rushing out with velocity inconceivable away from the sun, away from Neptune, away from the solar system, rushing out into the vast void of intersteller space, *hurled into the void with all the countless millions of the Neptunians upon it, hurled into the void out from the solar system never to return!*

Hurled into the void, we four knew even as we watched it whirl away from beneath us, by the pressure of its own colossal sun-ray, that continued to emanate from it! For that giant ray which the Neptunians had directed toward the sun had pushed back upon Triton with pressure inconceivable, even as we had known, and it had been only the other ray radiating out toward Sagittarius' distant star that had braced Triton thus against the sun-ray's unthinkable outward pressure! And with our halting of that immense other ray, with our halting of that bracing ray, the moment that saw its connection of bracing force or pressure broken between Triton and that distant star saw Triton hurled out instantly by the pressure of its own giant sun-ray against the sun, that awful outward pressure breaking the moon-world loose instantly from the hold of great Neptune, its parent planet, from all the solar system, hurling it out from the solar system's edge into the boundless outer void forever!

Marlin — Whitely — Randall—myself—as we reeled there at the window watching, as our space-fliers whirled up and outward from Triton even as it shot outward from beneath us, we saw its gleaming sphere swiftly diminishing as it hurtled out in the great void, saw that it was spinning as it shot outward from the impetus of that gigantic push, that the great sun-ray issuing from it was whirling with its spinning now! And then as its gleaming sphere shot out into the void away from us, away from great Neptune behind us, away from the solar

system's edge, shooting out into the cold and sunless outer void and bearing upon it all the Neptunian hordes to death, Marlin flung out his hand toward its diminishing gleaming little sphere in the black void before us, was crying out to it as though to the Neptunian millions upon it as it shot out, never to return.

"You of Neptune or we of Earth!" he cried. "One had to go to death—to doom! You fought for Neptune and your races as we fought for Earth and the solar system—but Earth and the solar system win!"

CHAPTER XVI

Space-Rovers

BEFORE us earth and its little moon gleamed brilliant in the blackness of space when our five hundred space-fliers shot in toward them once again, days later. Again we four held our familiar positions in the four control-chairs of our space-flier, and again Marlin and Randall and Whitely were gazing forth with me as at the head of those massed space-fliers we moved in with slowing speed. It had been for a score of days that we had reeled back through the solar system from Neptune, from its edge, had reeled back from the border line of that vast void of space, in which Triton long days before had become invisible, hurtling out into that void forever. Past perilous Saturn, and past mighty Jupiter, and through the dangers of the asteroidal belt and past red Mars once more we had sped, within us only a strange sick desire for earth once more; that earth which we knew, would be shaken even now with unimaginable rejoicings as its peoples saw the acceleration of the sun's spin that had menaced all our universe halted at last with the hurling forth of Triton days before. And now, as we sped in at last toward earth, it was in mutual silence that we gazed ahead.

Once again the outlines of earth's great continents were coming clear to our eyes as we shot nearer, and once again, now, we were heading toward that side of it that lay in shade, in night, toward the North American continent, to hover out from it, over it, and then to drop down toward it, down through the darkness of earth's night toward New York. Again beneath us earth's surface was widening to a vast dark plain as we sank down toward it, and then again through the darkness we had seen, beneath us, the gleaming lights of New York, and were sinking lower toward them. Down—down—until New York stretched beneath us but one colossal bed of brilliance, one vast mass of blazing lights above which there flashed to and fro the innumerable brilliantly-lit aircraft like countless shuttles of light, the giant World-Government Building and all the colossal buildings that stretched far away around it burning with unequalled brilliance, and their roofs and the ways between them thronged once more with crowds, such crowds as never yet had the mighty city seen.

A strange dumbness held us, as we sank slowly downward with our massed space-fliers. Then, as a great whirling light-beam from beneath caught our fliers' descending mass, held us in its glare, other beams were swinging toward us, holding us bathed in a white flood of light as we sank downward. And as we were discovered thus to the vast thronged city beneath, the swarming aircraft above it abruptly shot downward from about us, while the great roaring voice of the city's crowds abruptly ceased as the city saw us. Down through a great silence, the most tense and utter silence surely ever to reign in the mighty city beneath, we dropped, our fliers separating and falling smoothly over the crowds, over the seas of white, upturned faces, falling through that hushed silence toward the roofs of the great buildings beneath, our own toward the roof of the great World-Government building.

As we shot downward we saw that upon that roof waited now for us a massed and silent crowd, as in the streets below, that had given back to the roof's edges to make way for our own space-flier and those with us to descend. Smoothly I lessened the power of our lower ray, and smoothly we sank downward through the brilliant lights above that roof, until at last our own and the fliers about us had come gently to rest upon it, the throb of our generators ceasing. Then, with the same dense silence reigning outside, Marlin slowly was opening our space-flier's doors, and with Whitely and Randall and me behind him was stepping forth upon the great roof's surface, into the white brilliance of its lights. Hesitatingly, wearily, with the men of our other fliers gathered now about us, we looked around. Beside us there stood, and around us, the massed members of the World Congress, with the World-President with them. Over these silent figures we looked, a little dazedly, and out over the superhumanly brilliant, superhumanly silent city that stretched about us, and then up toward the great constellations as though in reassurance. For they stretched above us as before, as always, Capricorn and Sagittarius and Scorpio and the rest, with Jupiter and Saturn and Mars shining there, and with great Neptune, invisible here to our eyes, and farther still than Neptune its moon-world of Triton hurtling on toward those distant stars. Dazedly, slowly, we looked, up and around us, while still around us that hushed, thick silence held, and then saw that the World-President was coming toward us.

Across the roof he came toward us from those silent crowds about us, his hands outstretched, his voice unsteady.

"Marlin—Randall—Hunt—Whitely!" he said. And then—"You have come back once more—back to the earth that you and your forces have saved."

"We have come back," said Marlin, his voice low, strange. "Have come back with what remains of those forces."

And then, while the World-President and the World Congress stood silent before us, beneath the brilliant lights, Marlin was speaking slowly to them, was speaking in short, halting words of our flight outward, our escape from the great ambush at Saturn, our wild pursuit onward to Neptune and the colossal battle that had ended there with our halting of the other ray, with our hurling of Triton and all the Neptunians on it out into the void forever. In a hushed, strained silence the crowd before us was listening, and as the speech-apparatus beside us took Marlin's slow words out to all the crowds in all the vast city about us, and beyond, they, too, were listening in that same tense stillness. Then, when he had finished, that stillness continued unbroken for moments.

"Marlin—Whitely—Hunt—Randall—!" he was saying, again. "There is no way in which we can tell, there is no need for us to tell, what gratitude earth's peoples have now for you and for your men, who saved earth and all the solar system from a dreadful death."

Marlin slowly shook his head. "That gratitude is not for us alone who came back," he said, "but for those others of us who did not come back—who went to death out there for earth."

"We of earth know that," the World-President said, "and our gratitude is for them as for you—our silence now for them as for you. But you who came back—you four who dared first of all men out through the void, and who came back to lead earth's forces out to the terrific struggle that saved us—is it gratitude only that earth can give you?"

Marlin half-turned, his eyes meeting our own. "There is nothing earth can give us, more," he said, "for we have that which never men have had before, have the space-fliers and have now all the solar system's worlds before us! For to us four could be no greater gift, no greater thing, than that—to be space-rovers once more together!"

And as Marlin's eyes met ours, standing there on the great building's brilliant-lit roof with all about us the assembled masses of the World Congress, silent, with those other vast silent throngs in all the mighty city around us, we were looking together upward. Marlin with his brilliant eyes; Whitely with his calm, strong upturned face; Randall with a new light flaming into his tired eyes; I with a strange new eagerness clutching at my heart; we all were looking upward. Upward past the brilliant lights around us toward the constellations and toward the planets that shone among them, crimson Mars and yellow Saturn and white Jupiter! Upward with a sudden strange tenseness, forgetful for the moment of the hushed world around us that we had helped to save from doom, upward across the immensities of space where we four had roved toward the great planets that moved there across the star-sown summer sky!

THE END

A Visit to Suari

By A. Hyatt Verrill

(*Continued from page* 305)

"And when I told them of the form of ourselves they shook their heads and declared it was all but a tale, and asked where I had secured such wild and foolish ideas. Then, angered somewhat that they should doubt the truth of my words, I told them I was from Sonko-Huara and how I had come to Suari. At this they but scoffed and derided me the more, and argued that proof of the untruth of my words lay in the fact that I was like themselves in form, though I had said the denizens of Sonko-Huara were unlike any forms they had ever seen or imagined. In vain I argued and reasoned with them, but they, being so inferior in intellect and so self-assured that they were right, demanded that I should give them proof. What better proof could they ask than that I was there on Suari? What more convincing that I could tell them of the Sonko-Huaran beings, of our lives, our customs, the things we have accomplished?

"Yet they were not convinced, they demanded more, and at last, out of patience and to prove I was no imposter, I adjusted my instruments and, before their incredulous eyes, vanished from their sight to materialize once more in our beloved Sonko-Huara."

THE END.

In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

THE SCIENCE CORRESPONDENCE CLUB
ATLANTA BRANCH

Editor, AMAZING STORIES:

Many thanks for your kind favor of the 10th, in which you state "I assure you I was gratified in being elected an honorary member." I can assure you that all the members of the S.C.C. are gratified in your acceptance, and consider it an honor to have you associated with us.

This is your organization as well as anyone else's and any suggestions which you may offer, you can rest assured, will be acted upon and carried out. Yes, Dr. A. Hrdlicka and David H. Pickering are honorary members, and in addition there is that lovable Wm. Tyler Olcott. We are mighty proud of our honorary members.

Now, we have organized a branch of the S.C.C. here, known as the S. Lynn Rhorer Society of Greater Atlanta. It is possible that you have heard of the late Mr. Rhorer, the organizer of the Southern Cross Observatory, Miami, Florida, and of this branch we are more than proud, as I think that I can say without going too far, that we have a branch which cannot be duplicated, or should say cannot be duplicated at the present time. We have our telescope (we are working on a ten-inch at the present time) over three hundred scientific books in our library, both modern and ancient books, Science Fiction magazines of all publishers, ores and rocks, which in itself is a large collection, and in addition a large collection of fossilized bones which I was fortunate in collecting myself, finding them all in the phosphate mines, a part being identified by the American Museum of Natural History (which reminds me: in a paper a few days ago there was an article regarding a Mr. Williams finding in Florida one of the teeth of a horse which greatly exceeded in size any of this date). We are equipping a laboratory, have a chemical set and have regular meetings. (Please don't get tired as I wish to give you the whole story.) Our meetings are each Tuesday evening 7:30. We operate under astronomical time, and Julian dates. Mr. Olcott is an honorary member.

Mr. Olcott in one of his letters to me stated: "We cannot do too much for Mr. Rhorer." I do consider myself fortunate in organizing this branch, all live wires, deeply interested in science and fiction.

Our program for April was this:

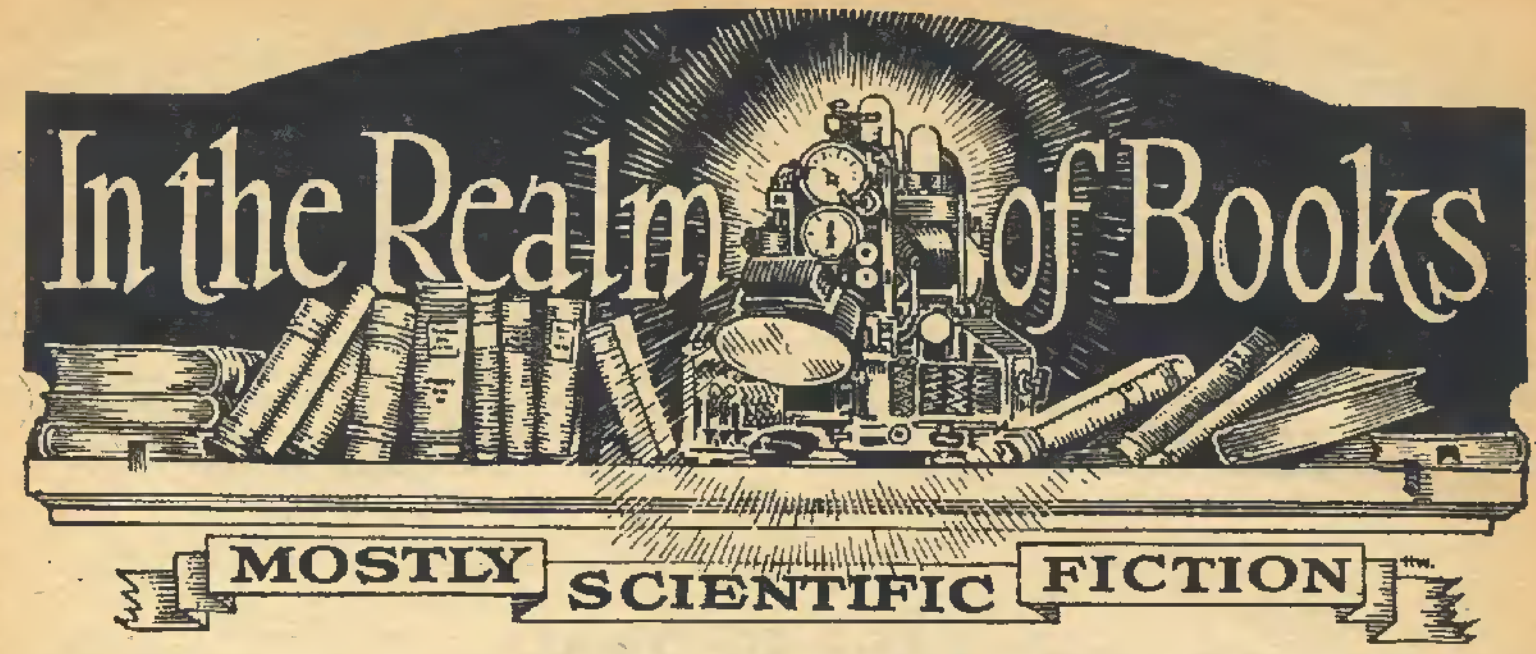
Tuesday evening, April 15th, The Creation. The first form of life.

Tuesday evening, April 22nd, Evolution.

Tuesday evening, April 29th, Future.

In addition to discussions, the telescope is set up each meeting night, provided the seeing conditions are satisfactory. The lowest attendance

(*Continued on page* 373)



Atlantis Comes Forward Again

"Mukara," by Muriel Bruce. *Published by Rae D. Henkle Co., Inc., New York, $2.50.*

ATLANTIS, with its many unsolved riddles and its few meager facts, will always remain one of the most fascinating backgrounds for an adventure story. A great many novels using the subject of Atlantis as a basis have been published, but "Mukara" stands out. It is a first class fantastic adventure story and ranks as high, it seems to me, as Herbert Carew's, "Vampires of the Andes," a book which unfortunately appeared only in England. Miss Bruce's book is a very palatable mixture of strange adventures in strange places, a quest for a lost city inhabited by descendants of the Atlantians, winding up with the restoration of the ancient throne of Mu to the rightful heir. It does not seem right to tell the story, yet the enumeration of the ingredients which make up a tasty dish has never spoiled my appetite for the dish itself. On the contrary, where good material is used, knowledge of it only furnishes additional inducement.

An old Portuguese record fell into the hands of Kirby, a famous explorer, who started out to find the lost city and its treasures. His companion is killed by hostile Indians, but he returns to England with the old record and a necklace composed of large diamonds set in orichalcum, the fabled metal of Atlantis. Expeditions are expensive. It is not feasible to sell the diamond. Finally Van Camp, an American newspaperman, agrees to finance a new expedition in exchange for exclusive first rights on the story. The expedition, composed of Kirby, father, and his son Richard, Woodcock, a doctor and chemist, and Antony Freyne, a linguist, set out for the interior of Brazil, under the guidance of Kirby, senior, who reveals to them that he has met one of the lost people on his previous trip and that he has been requested to return and bring three more companions. After many adventures, fighting with cannibal pygmies, transversing a valley infested with poisonous black and white snakes, they just manage to reach the foothills of a magnificent chain of mountains. Almost dying of thirst, they are rescued in the nick of time by emissaries of the lost race they are seeking. They are carried in hammocks through secret tunnels into Mukara, capital of the Kingdom of Mu and having been rejuvenated in a veritable fountain of youth, they meet the high priest Kado and are admitted to a marvelous "Taj Mahal" tile temple. They witness the dance of the young moon, danced by princesses of the royal race and are given separate dwellings, where servants look after their welfare.

They meet Prince Nubti, who, fearing that these strangers are assisting the high priest Kado in his plot to deprive him of his throne, tries to kill Richard, who is brought back to life by the Mudra, a sort of high priestess.

They also meet the royal princesses, and by and by unravel the plot of the high priest, who, by marrying Richard to Ura the hereditary princess, hopes to ascend to the throne of Mu. Richard has to undergo certain tests and rites and having told Nubti that he is already married and that he would rather help him than Kado, is given certain instructions and a talisman which proves effective. During the tests which Richard has to undergo, he makes the necessary mistakes, so that he becomes, not the bridegroom of Ura, but a priest of the inner circle. Kado and the Mudra, seeing their intrigue revealed and spoiled, declare war upon the Nubti faction. Their allies, the Amazons, gigantic and misshapen women, try to take Mukara by force, but Nubti and his well-trained army defeat them in a bloody battle. Nubti ascends to the throne of his ancestors. The four explorers have achieved large honors helping to quench the revolution, but only two can stay in order to fulfill an old prophecy. Therefore the Kirbys return to England. Antony, the linguist, and Woodcock, the doctor, remain behind; one to study the ancient records, the other to solve the riddle of the death ray, of the dust of the sun, etc.

To anyone who likes a book full of thrills, the book "Mukara" is heartily recommended.—C. A. Brandt.

READERS' VOTE OF PREFERENCE

Stories I like:	Stories I do not like:
1.....	1.....
2.....	2.....
3.....	3.....
4.....	4.....
Why:	Why:
.....	.....
.....	.....

This is YOUR magazine. Only by knowing what stories you like, can we please you. Fill out this coupon, or copy it and mail it to AMAZING STORIES, 381 Fourth Avenue, New York City, telling us what type of story—interplanetary, biological, psychological, archeological or other kind—you prefer.

Also, we are very much interested in knowing how you like our new dress and make-up. We are trying to make AMAZING STORIES a *real* magazine, but we need your help.

I prefer .....

Name..... City.....

Address..... State.....

(Continued from page 371)

at any meeting we have had thus far was mine.

Now I am touching on a personal matter. I am personally furnishing a club house, electric lights, my collection of bones, telescope, and books which I would not take a great sum for. (I wonder if you have ever seen the book "The Moon," by Naysmyth & Carpentier, the photos being pasted in the book?) I have a copy of it.

We will cooperate with any branch of the S.C.C. to fullest extent; we will cooperate with you in any way possible for us. We are determined not to be "has beens."

I am a believer in psychology, have found it to be more than just a word; it really has a meaning and is a science, so I have the boys worked up in this manner. You can see the type of membership cards we use; the Saturn is my personal letter-head mark. I am having each member make up an individual mark for his letter-head; for instance, one who is more interested in psychology, his mark is "The Thinker." Another electricity, his mark "Lighting," etc., then in addition, his letterhead is to include the letters of each society he belongs to.

The letter I wrote welcoming you in the S.C.C. I was in hopes that you would print in A. S. If you noticed (glad that you spelled the name wrong, you spelled same Cason when it was intended to be Eason) in the article by Raymond Palmer, he had me listed as an astronomer in his list of valuable members. My letter was a sort of a throw back to him and Dennis, as they have worked very hard on the S.C.C.

F. B. Eason,
Secretary S.L.R.S. of Greater Atlanta,
400 Jefferson Avenue,
East Point, Georgia.

(We are greatly pleased to receive your kind letter of April 13th. The work you are doing for the club shows a character that is most impressive. It gives one great confidence in the S.C.C. to hear of the activities of your branch. Except for the way your letter depicts your work we might enlarge on the topic. But you have told everything.—EDITOR.)

LETTERS LIKE THIS NEVER GO INTO THE WASTE BASKET

Editor, AMAZING STORIES:

I've never written to a magazine before. I've gotten more pleasure out of your magazine than any other I've read so far. I read the first issue the first day it was on the stands in San Francisco and I've been a rabid AMAZING STORIES fan ever since, and I probably will be until the day I die, which I hope will be a long time from now. I have no brickbats to offer, for I think your magazine is as near perfect as it could possibly get in so short a time. I think your new artist, Wesso, is even better than Paul, which is going some. I hope we get some more stories by the author of "The Bridge of Light." That came near being the best story that has come my way. None has even come near being as good as "The Moon Pool." I'd like to suggest a reprint of those two wonderful stories "The Mad Planet," and "The Red Dust" and as many sequels as you can dig up.

I am, a rooter for it.

Donald Hinson,
645 Spruce St.,
San Jose, Calif.

(AMAZING STORIES has now been running for a number of years. It is very pleasant in the light of that fact to get a letter from so appreciative a correspondent as you are, perhaps more appreciative than we deserve, telling us that you have read it from the very beginning. Our hopes are that you will read many more issues of it. You will observe that while we are continually giving stories by authors who have never written for us before, that the old authors such as Mr. Verrill, Dr. Keller and Dr. Breuer, stick to the ship, and continue writing for us. If you could see the number of stories which we receive from authors, you would realize that we must go very slow on the idea of reprints. Any of those which we gave in the past were far from meeting universal approval by our correspondents. The "Discussions Columns" gives an abstract as it were, of what many readers think of our work. Besides the letters we publish, there are many others, because we have not room for everything, so that the editors of this magazine are in constant touch with their audience, if we may so term our circle of readers. You will find many stories in future issues by the author of "The Bridge of Light" which was a very charming story and one which embodied most interesting ethnology and archeology, the author being a very distinguished authority in both branches.—EDITOR.)

THE UTOPIA OF THE FUTURE

Editor, AMAZING STORIES:

Machinery will yet civilize the world. Perhaps some one will say: "Are we not civilized?" No, we are not civilized people as yet. We have made advancement, yes. But we are just on the outer edge of the jungle. Three hundred years from today; perhaps, one hundred; folk of that time will look back at us, and say, "My, my, what barbarians." There are two things that science will have to combat. First, superstition, that old "hydra-headed monster," that has kept people in ignorance, and held science back a thousand years. Just for instance, come with me mentally to those countries that are considered the most superstitious. What do we find? Lack of education—seventy or eighty per cent illiterate. Have our inventions come from those countries? Did the telephone, the telegraph, the steam engine, wireless, radio, airships, moving pictures, talking machines, electric lights, television, come from there? They did not. To my mind, a civilized people are a happy people. I do not mean a "cat on the rug" contentment. I mean that some day there will be hustling cities from one end of our country to the other, where every worker will compete with every other worker for efficiency. The machines will do it. The machines will make beautiful, wonderful highways. The machine will bring the country close to the towns, thereby doing away with the lonesomeness of it. In fact, the day is not far distant when men will have cities a thousand miles long. The machines will bring about a great unemployment problem. That will bring discontent and unhappiness which will be a menace to life and property. The intelligent classes will then form a system of industry that will put everybody to work. Such a system will gradually do away with swollen fortunes and will put an end to poverty. Slowly, perhaps, but surely, will come the day when there will be no rich, and no poor. Presto! Science will take leaps and bounds such as the world has never seen before. Then interplanetary communication will become a fact. People will have time, money and intelligence, to devote to things scientific, which will be for their happiness and comfort; and which will satisfy the human craving for more knowledge, and greater achievement. Wouldn't this be a glorious planet to live on then? Machinery will bring all these things to pass. And yet old superstition says "Come in the house, Johnny, don't look at that ox-cart, if the Lord had intended us to fly, he would have given us wings."

Greed is next. Some of our rich men can endow observatories with telescopes that would bring the moon within a few miles of us. They could make the first projectile that goes to the moon. With their millions, they could make it possible for the astronomer, watching with the giant telescope, to see the projectile as it struck the moon's surface. But science will go on; ruthlessly, relentlessly—regardless of its handicap, and sometime, somewhere in the future, earth's inhabitants will wake up and find themselves in the midst of a millenium of peace and contentment, and always with an intense desire for further advancement.

A word about scientific fiction in AMAZING STORIES Monthly and Quarterly, I'll say Amazing is right. Great Jupiter, Venus, Mars, Neptune, and all the rest! What a riot of imagination! Shade of Jules Verne, Noname, and Rider Haggard, if you could only come back and see what A. Hyatt Verrill, Edmond Hamilton, and Harl Vincent have done! I wonder if someone in the future wil say the same about Verrill, Hamilton and Vincent? Why not? When I was a young man I read Verne, and Noname, for entertainment, just as I now read AMAZING STORIES, not even dreaming that any of it would ever come true.

I will say that my favorite stories are interplanetary. I like to think of the moon as having an atmosphere about fifty feet above its surface. Thin maybe, but dense enough to support the lives of millions of Lilliputian human beings (one foot high) living there. Wish Vincent would get his imagination going and write a story about the little men and women living on the moon.

C. R. Lloyd,
Route 1—Box A, Phoenix City, Ala.

(It is pleasant again to get a letter from an optimist. We only hope that your happy prognostications will come to pass. But our own country is not free from superstition. An astonishing number of people believe in communications from the dead, believe in the ouija board's manifestations, fortune tellers and the spiritualistic medium. Subconsciousness is at the root of some things which are interpreted by the superstitious as supernatural.—EDITOR.)

A QUANTITY OF FRIENDLY CRITICISMS

Editor, AMAZING STORIES:

In the December issue, I read "When Atoms Failed," by J. W. Campbell, Jr., and I was very much delighted. It was one of the best stories in the magazine. "The Green Prism" stories I don't care for very much, but the "Colloidal Nemesis" was excellent. Publish more of that kind. "The Twenty-first Century Limited" was *EXCELLENT.* Tell Harl Vincent to keep up his good work. Your magazine covers are just the kind I like to see. "The Green Girl," by Jack Williamson, beats Jules Verne's "Twenty Thousand Leagues Under the Sea." Boy, but that's excellent. "Explorers of Callisto" and "Callisto at War," was excellent and more excellent. "The Ice Man" is just as good as the "Callisto" novels. Publish more of them. You have a great staff of writers and your illustrations are excellent. I am a boy of fourteen and a faithful reader of AMAZING STORIES. I have started reading your magazine in December, 1929. At the first story I realized it as worth more than its cost. I believe that it could be "cold fact tomorrow." I have so far been unable to get the AMAZING STORIES, seasonly. One thing I don't like is that your Discussions Department intermingles with the advertisements so in case anyone wanted to put them in volumes or bind the magazines they could cut out the advertisement part and have a good book. Keep up the good work.

Huml Stephain,
403 Roosevelt Ave.,
Syracuse, N. Y.

(Mr. Campbell puts a great deal of thought and study into his stories; they are really popular treatises of science topics. If you glance through our Discussions Columns you will find that "The Green Prism" stories have been very much liked. Harl Vincent is a professional engineer and a very excellent writer, and is one of our highly esteemed contributors and we are glad that you like his work. We are very glad to get letters from our young readers. You must remember that in making up a magazine there are many things to be considered, the discussions are not put in alternate columns with the advertisements without a reason.—EDITOR.)

THE LIMITATION OF THE SIZE OF INSECTS

Editor, AMAZING STORIES:

I have always been an avid seeker of wonder tales, ransacking the public libraries in the various cities where I have lived for this kind of fiction. Being an earnest student of science, any story with a scientific slant appealed to me. I devoured all the Jules Verne stories, also those of H. G. Wells, for whom I have a great admiration, also many other authors whose names are not so well known. So you can imagine my delight when I discovered AMAZING STORIES. I have read all issues except the first five which I have not been able to obtain. Not all the stories, of course, have appealed to me. I analyze them as I read them and if I find them incompatible with what is known in science I give them a lower rating. All this is good exercise in thinking, and not the least of the advantages gained by reading Scientifiction. I realize that not all of your readers have had enough grounding in the various sciences to evaluate the subject matter of the stories. I suggest, therefore, that in each issue you review each story and point out wherein statements pass beyond science into pure imagination. You did that with one story and it added greatly to the value of the story. That was "Ten Million Miles Sunward."

I would like to see more of the Wells stories, for example "Men Like Gods," a fine fourth dimension story, also "The Food of the Gods." I also recommend "Darkness and Dawn," by George Allan England.

The best interplanetary story yet is "The Skylark of Space." The next one is "Around the Universe," which was relished all the more for its humor. "The World of the Giant Ants" was an education in entomology as well as a thriller. So good was it that I am willing to pardon the impossible exaggeration of the size of the insects. Haldane in "Possible Worlds" shows why no insect can be more than two inches thick—it depends on circulation of air instead of circulation of blood. Also weight varies as the cube of the length. He states that a change in size requires a change in form. There are definite limits to size of each kind of creature. It must not be too small or too large. Gravity is the foe of large creatures. Surface tension of liquids menaces very small ones. A fly crawling out of water lifts twelve times its weight. No species

of animal can exist much larger or much smaller than it now is. This rules out the giant "Nth Man" or the "Microcosmic Buccaneers." The latter lived on a world consisting of an electron and proton, a world resembling ours with land and water. Was this water made up of molecules of H_2O? And were these atoms made up of still smaller electrons? It becomes absurd.

I think the greatest obstacle to interplanetary travel is the danger of meteors. I do not share your misgivings regarding acceleration. A rocket ship might leave the Earth's atmosphere at a rate low enough to avoid undue friction with air, then after reaching outer space, easily attain a constant acceleration of 32 feet per second, which would preserve the effect of normal gravity. At this rate it would reach a speed of 2000 feet per second one minute later; one hour later it would be going 23 miles per second; in 24 hours the speed would be 552 miles per second. In 372 days it would reach the speed of light, without the acceleration producing more than our accustomed weight.

J. E. Arnett,
2940 Seminary Ave.,
Oakland, Cal.

(We hardly feel that the magazine has space enough now for the text of its stories and for the Correspondence Department. We wish we could use more space for the Discussions. As it is, we give a little note about each story at the beginning. As our stories are fiction, we incline to the belief if they had to be subjected to such criticism and limitation as would be brought to them by such a writer as Haldane, that the magazine would be far less interesting than it is. We rather favor our writers giving extraordinary things as long as there is a good touch of science in all of them. Your last paragraph on possible acceleration is extremely well put and we recommend it to those of our readers who are interested in our interplanetary stories.—EDITOR.)

SOME CAREFUL IF UNFAVORABLE CRITICISM

Editor, AMAZING STORIES:

In composing this letter, I have devoted myself almost entirely to a criticism of your illustrations —not that they aren't well done and give the reader an excellent idea of the marvelous inventions, super cities, or distant worlds which they are supposed to portray. However, several discoveries that I made concerning errors on the cover of the March issue fired my imagination sufficiently to cause me to write down, on this paper just how many mistakes I might find throughout. I trust you agree with my critical attitude, since your replies to flattering letters sent to these columns would infer as much.

The first fault in the cover is this: it is obvious that the ceiling of water and the submersible emerging therein show the entrance of Sam and Mel into the hidden world beneath the Mangar Deep as depicted in "The Green Girl." I believe that a luminous red gas was supposed to lie directly beneath the water, but your artist, either intentionally or unintentionally, omitted it. In addition, the ocean bottom, instead of curving upward, would slope down towards the horizon. Although fish are not generally considered rational beings, it does seem strange that they should risk themselves so unnecessarily by approaching the surface, or might I say bottom of the water. It is doubtful if the gravity repelling gas could successfully support them in case of their falling through.

I can not criticise the illustration of the atomic motor, because I have no idea of what they will be like if the energy of the atom is ever released by man for his own use, so we will pass that up.

Next appeared a portrayal of a huge winged plant, every detail of which was perfect with one exception. Three knobbed appendages that were organs of sense were described as protruding from the flower on page 1126, but I counted as many as five.

In the illustration of fourth dimensional Paris, what was the meaning of those strange cubes mixed in with the real city? At first glance, I took them for the buildings of a city of the fourth dimension that had chanced to be constructed on the site of the terrestrial city. However, there is no mention of such a place in the following narration.

Passing onward, we come to "The Gostak and the Doshes," which can also bear discussion as pictured. The hero was supposed to imagine himself looking down upon the campus only to open his eyes and really find himself to be doing so. Then, he walked down to it. Mr. Morey seemed to consider him standing on a higher plane, and how in the world he would ever get down is a mystery to me.

Since I have used a lot of space and can think of no other major errors, I will make no further comment. Of course, my criticisms must seem rather unusual, while I did not mean to throw any mud at your artists. Mistakes of this kind can not be helped. They are continuously duplicated in any number of magazines all over the country. However, I have originated an amusing game, to me at any rate, a thing which any reader might try.

P. Dow,
6405 Ridgewood Ave.,
Chevy Chase, Maryland

(The conception of what we may term a blanket or sky of liquid ocean overlying a country under the sea was an extremely difficult thing to illustrate and there was much discussion with our artist concerning it. Of course, the fishes will have to take care of themselves, but if they could swim high up in the water, there is no reason why some of them should not be able to swim about near the limiting surface. The ocean bottom may be a valley at this particular place, there is no idea that there has to be a perfect spherical surface sloping away in all directions. The fourth dimensional city of "Paris" was mystified by the artist intentionally by putting in those curious lines. The fourth dimension, as you know, always involves the idea of geometry and the strange cubes, as you call them, mixed in with the real city, carry the geometrical conception into the illustration. The hero in the "Gostak and the Doshes" was in so mystical and curious a world that we feel that Mr. Morey portrayed him very satisfactorily in what, of course, in ordinary existence would be an impossible world. We always appreciate letters of criticism and unfavorable comments if they are done in as honest a spirit as yours shows.—EDITOR.)

PROMISES THEY SAY ARE LIKE PIE CRUSTS, MADE ONLY TO BE BROKEN

Editor, AMAZING STORIES:

Thus far, the stories have been criticized, the covers have had their share of praise and denunciation, the readers have been criticized and the editorials have had their share of comment. It is *your* turn now.

We, the readers, have been promised so many things and received so little that I have decided to write this letter showing you the error of your ways (fondly, of course). Way back, when A. S. was first on the stands, we were promised several stories. Among them, "The Messiah of the Cylinder," "The War in the Air," "The North Pole Fire," and many of "Dr. Hackensaw's Secrets." You promised us "Station X" and, wonder of wonders, we got it. That was the beginning of the promises. Then, in that short article "In Preparation," we were promised "Vanishing Movies," by Teddy Holman. The story seems to have vanished. Appropriate title.

In "The Purchase of the North Pole," there is mention of the giant cannon, the *Columbiad*, and, in a footnote about the cannon, you promised us the story "From the Earth to the Moon." Four years and nothing has been done! Ye gods and little fishes!

The annual surprised me pleasantly; it had a story by Edgar Rice Burroughs. "The Master Mind of Mars" lacks only one thing: a sequel. And then you gave us "The Land that Time Forgot." You have, at least, kept your promise regarding the publication of Burrough's works.

And, incidentally, the annual told us that we were to have a sequel to "The Face in the Abyss." For heaven's sake, if we are not to get the sequel, say so and relieve the suspense.

In the October, 1927 issue, there were three French stories spoken about in your columns. And you said that you had them on the list. True, you added that it may be *some* time before you would publish them but don't you think that enough time has passed.

In the May issue of the following year, you said that "we have not *yet* printed 'The Girl in the Golden Atom.'" I wonder how long that yet is to last and, come to think of it, you have been depriving us of Ray Cummings' stories. You weakly say in protest that some readers do not want reprints. Horse radish! The reprints are, in my opinion, better than many of your original tales. Why haven't you printed more of Cummings' works? You say that you have a great list of new authors. They may be good and they may be bad. But we know what we are getting when we read a tale of Cummings.

Although this was not a promise, it was a crime just the same. Many readers clamored for "The Blind Spot." And we get "The Nth Man." True, the latter story was a masterpiece, but where does it come near the former? In addition to "The Blind Spot," you should try "The Man in the Moon," "The Man from the Moon," and "The Missing Mondays."

In answer to a correspondent, you said that we were going to have many stories by those authors, meaning A. Merritt, Verrill and other favorites. Let's see how you keep this promise.

Isidore Manzon,
544 Myrtle Ave.,
Brooklyn, New York

(While the editor is supposed to make some comments on the very nice letters which we receive from our readers, he often has occasion to say "this letter speaks for itself." Certainly, if there was ever a letter that did speak for itself in a very unmistakable language, it is yours. There is no weakness in our not giving more reprints. We cannot but feel that the scope of this magazine is rather to give new and original matter than to reprint the old, which can be read in any of the public libraries. You speak of Verrill and Merritt. You certainly have received a lot of stories by Mr. Verrill; more are coming. He is one of our most constant writers. About Merritt, we can't say anything definite about him yet. So remain our friend and we are sure you will like the stories we are giving. Some of the stories you mention are still on the "in preparation" list.—EDITOR.)

A LETTER WRITTEN A FEW DAYS BEFORE THE DISCOVERY OF THE NEW PLANET

Editor, AMAZING STORIES:

I have been reading the Discussions columns for some time, but have never before offered any suggestions myself. Looking over your January issue, I noticed a letter that interested me. In this letter the writer severely criticized the story entitled "Out of the Void" by Leslie F. Stone, mentioning that the fictitious planet, "Abrul" could not possibly have existed. He points out that any planet of that size, outside the orbit of Neptune, would exert an attraction on that planet and Uranus that would have been noticed, and caused its discovery long before now. I would like to substantiate the possibility of this story by stating that such irregularities in the orbits of the outermost planets *have* been recently discovered by astronomers.

To give you some idea of how your stories rate in my estimation, I will list a few below with my conception of their worth.

The Green Girl: Imaginative, but interesting. The Conquest of the Earth: Very good. When the Atoms Failed: Best of the lot. Fourth Dimensional Space Penetrator: Contains some very good theories and was very interesting. The Corpse that Lived: Pointless; no plot. The Secret Kingdom: Unscientific, but well written. Cold Light: A story of scientific interest. The Explorers of Callisto: One of the best. The Metal Horde: Below the author's standard. The Astounding Enemy (Quarterly)—One of the most interesting stories I have every read; White Lily (Quarterly)—far-fetched; incredible. Air Lines: Contains some worthwhile ideas.

I have mentioned practically all of the stories I did not like while I named only a few of those that appealed to me. I enjoy most of your interplanetary, psychological, and insect stories, but can find little enthusiasm for such pointless stories as "The Corpse that Lived"; however this may be only a matter of taste. Fourth-dimensional stories do not usually appeal to me but "The Ship that Turned Aside" and "The Fourth Dimensional Space-Penetrator" are two exceptions. I enjoyed the latter immensely.

I can see no impossibility in time travel. We are always doing so; the entire universe is speeding toward the future just as surely as any object is traveling in space. We can travel in any other dimension; why not in time? The human mind simply cannot grasp the idea; consequently, although not impossible, I don't believe it will ever be done.

Life on other planets has always appeared probable to me. Why should we be so egotistical as to believe that our little planet is the only inhabited one. Of course there may not be life as we know it; it may be in a gaseous or liquid state and not require either, water or oxygen.

John A. Luttrell, Jr.
305 South England St.,
Williamsburg, Va.

(And now the new planet has been discovered. The irregularities our correspondent speaks of have been known for some years, and the existence of the planet was predicted on them, and the actual discovery was made a few weeks ago, which proves once more how careful we must be when we say anything is impossible.

A YOUNG LOVER OF AMAZING STORIES

Editor, AMAZING STORIES:

As this will be the last time that I shall communicate with your "Discussions" Department, I shall make this letter as clear and concise as possible. I will comment on the magazine as a whole, then on a few stories, your critics, your art department, and the minor features of your magazine.

The magazine, AMAZING STORIES, is one of the finest, most thought-provoking, cleanest, and most interesting magazines on the market. I guess that will give you an idea of what I think of your publication.

The best stories: The finest stories you have published, at least in my opinion, I have listed below. They are perfect examples of the scientifiction story. They are clean, vivid and interesting; they are full of good thought-provoking science, they have good plots which are worked out in a realistic manner. Here they are:

1. "White Lily," by John Taine
2. "The Other Side of the Moon," by Edmond Hamilton
3. "The Bridge of Light," by A. Hyatt Verrill
4. "Into the Green Prism," by A. Hyatt Verrill
5. "Beyond the Green Prism," by A. Hyatt Verrill
6. "Locked Worlds," by Edmond Hamilton
7. "The Man from Space," by L. Taylor Hansen
8. "Ralph 124C41 Plus," by Hugo Gernsback
9. "Baron Münchhausen's Scientific Adventures," by Hugo Gernsback
10. "The Radio Robbery," by Capt. S. P. Meek, U. S. A.
11. "The Second Swarm," by J. Schlossel
12. "The World of the Giant Ants," by A. Hyatt Verrill
13. "When the Atoms Failed," by John W. Campbell, Jr.
14. "Death from the Skies," A. Hyatt Verrill
15. "The Secret Kingdom," by the Kline Bros., Inc.
16. "Microcosmic Buccaneers," by Harl Vincent
17. All of Dr. Keller's work
18. All of Aladra Septama's work

Your critics: Once in a year, one may get a bright idea, but not often. I don't mind a man's saying he likes a story, nor do I mind a man's saying he doesn't like a story. But I'll be dogoned if I like it when a "so-called critic," usually one who has never written a story or drawn a picture himself, tears a story to pieces and makes a fool of the author or artist or whomever he's criticizing.

Your Art Department: This, to me, is the most interesting feature of the magazine. Mr. Wesso (or is it Wessolowski) is doing the finest work of any magazine illustrator I have ever seen. He has a difficult job, and he does it nobly. I can, at a lesser extent, say the same of Mr. Morey. *Don't lose either of them, Dr. Sloane!*

A few minor features: I guess you'll feel insulted, Mr. Editor, when I call your editorials a minor feature. But they are that, to my mind, when compared with the stories. This does not mean that they are inferior. They are well written and supply a little cold-blooded science to mix with the fantasy of the tales.

The Discussions Department is one of the most interesting features of the magazine. It is very enjoyable.

I just want to say a word about the story entitled, "The Man from Space." This is the most beautiful story you have published yet. The description of the color and the beauty of the strange world, are to me, fantastically beautiful. There is one sentence, "I sat up and drank in the cubistic beauty of the crystal palace under these changing rays," which will remain in my mind forever. Think of it, Mr. Editor! The beauty of the vast Unknown! The wonder of Space!

Well, Mr. Editor, I guess I'll sign off. I know you wouldn't print this letter, it's so long. But you might manage to get it in a Quarterly. In your latest one you published a letter that was almost a story.

I am a boy of fourteen, as you can easily see by the vein in which this letter is written. When I grow up, I'm going to write a story. I am preparing myself for it now by doing my best in literary work and writing to you as often as possible.

Well, Dr. Sloane, I guess I'll conclude and put everything in one sentence—"I am in love, not with a human, but with AMAZING STORIES.

Robert Allen Ward,
544 E. 38th Street,
Baltimore, Maryland

(This is a letter from a young correspondent and one who is certainly very friendly to AMAZING STORIES. He criticizes our correspondents who speak unfavorably of the stories. But our stories cannot please everybody and they are proper subjects of criticism from our readers, whom we believe to belong to the thinking class and are not those who read only to pass the time, which is as bad as cutting a hole in one's pocket to let the contents escape. We differ from you therefore, in our judgment of our critics, most of whom we certainly esteem, and who would guide our steps better, if they did not have the faculty of disagreeing with each other. We cannot close without telling you that you write very well. But do not be too hard on those whom our efforts do not please. Naturally, our editorials are a minor feature covering less than a page of the issue. We are publishing what is emphatically a fiction magazine, and hope to keep it such.—EDITOR.)

A PLEA FOR CREDULITY

Editor, AMAZING STORIES:

I have read your repeated remarks in "AMAZING STORIES," stating your beliefs on the impossibility of Space Travel with increasing wrath. You have often heard the time-worn statement that the people of the 18th and 19th centuries did not believe in a great many of the mechanisms that we possess today. The submarine came out of the figments of an imaginative brain. The airplane was given birth in the minds of a group of thinkers who exercised their imagination. Yet it was an American scientist who proved *mathematically* that the flying machine was an impossibility! You may cover a hundred sheets with mathematical proof on the impossibility of Space Flying and I will come back with a laugh and say to you: "There is nothing so deceiving as facts—unless it is figures." By which you will see that my faith in the future of Space Travel is supreme! The pioneer work being made by Prof. Goddard in America, and Herrs Vallier and Opel in Germany, shall one day bear fruit! The possibilities are tremendous!

Joseph Fox,
2628 S. Beulah St.,
Philadelphia, Pa.

(You are perfectly right in your views about impossibility. You notice the heading we have given your very interesting letter. The American scientist who disbelieved so thoroughly in flying was Simon Newcomb, now dead, who ranked as one of the leading astronomers of the world. Again you are perfectly right, we think, in your views that reaction, such as that of the rocket, will have to be used if ever space flying is indulged in or carried out by mankind, because in space there is no air for propellers to work against or upon.—EDITOR.)

SOME CRITICISMS OF CONTINUED STORIES AND OF ARTISTS' WORK IN OUR ILLUSTRATIONS

Editor, AMAZING STORIES:

You don't publish very many letters from women, so I feel a little bit forward in writing you, but I want you to know that I enjoy your magazine more, I think, than any other periodical on the market.

I read the first instalment of Jack Williamson's "Adventure into the Mangar Deep," and I agree with some of your critics that it's harmful to "split" a tale like that and make us wait thirty-one long days to complete it. Some cheaper magazines do that to insure the sale of their following issue, but AMAZING STORIES should not resort to such tactics. It is so wonderful and interesting, the sale of it is insured regardless. I have never before patronized a magazine that promised stories and only gives half of them. It is due to your deeply fascinating tales that I am still a fan. But I suffer mental torture when I turn the page and find at the end of the column the disappointing words: "To be Continued." Ugh! How I hate those three words, anyway. To show you how very important complete stories are to the success and progress of today's magazines, there are some now that print right on their covers: "Only Complete Stories." I buy them in preference to the others that only give you suspense and nervous prostration for your quarter. Such magazines as yours are for the purpose of change and relaxation. How do you suppose we can relax if we're held (literally) on pin points from month to month. And usually it's the prize tale of the issue that's split.

Now, about your artists. Some are good. Others are rotten. The men look like ghosts, the women like "old maids" and some of the scenes (not diagrams) look as though they had been sketched by an architect. Too exact. Nature is rampant, flourishing, extravagant, not cut and dried! I noticed in the March issue in "Lanterns of God," Georgie seems to be standing on a porch (no windows evident) and yet there are velvet drapes, statue and an evening gown on her in (what seems to be, by the sky's appearance) afternoon. Let the writers write in the fourth dimension, but, for cryin' out loud, ask the artists to please stick to facts. My kid brother could sketch better than a few of them, and playing marbles is his occupation.

Next to the "Green Girl," my favorite this month (March) is "The Gostak and the Doshes." I got a laugh (that was worth a bottle of tonic), where the writer (evidently) is present at the Fourth Dimension lecture; where the lecturer pronounces that "the Gostak distims the doshes." The writer is so human in portraying his bewilderment in what it's all about, I had to scream. I was "there" with him, so real did he picture it.

Now, that's writing! Give us more of Dr. Miles Breuer's stuff.

To sum it all up, I have my likes and dislikes, my whims and disapprovals, but AMAZING STORIES is my favorite anyway. Being a psychologist, Theosophist, a student scientist and a believer more in what we can't see than what we think we see, it's great to know that there are such booklets as yours. Let other women have their fashion magazines, snappy stories and household hints, give me something that exercises the gray matter and makes one *think* for a change.

And I'm no laggard either. I won the International Beauty Contest of 1922 and seventeen other prizes.

Irene (Frechette) Batz, 1625 Hertel Ave.,
Buffalo, N. Y.

(We have tried out a great many artists on the paper. We have now two artists who do most of our work, whom we consider extremely good and we are not indulgent critics either. We are sure that you will like Morey's work and also Wesso's. We cannot tell you how pleased we are to know that you liked Dr. Breuer's story about "The Gostak and the Doshes." You laughed at it, you say, but you certainly realize that at the base of all the very nice, humorous presentation of his subject, there was almost sad sarcasm and criticism of the stupidity of mankind in carrying on wars. It impressed us very strongly. You will get more of Dr. Breuer's "stuff," as you call it, for he, we flatter ourselves, is one of our writing staff. Do not suppose for a moment that we do not like letters from women.—EDITOR.)

A LETTER FROM A NEW READER

Editor, AMAZING STORIES:

I have just started reading your wonderful magazine, and perhaps it is a trifle premature for me to form an opinion of the stories. Yet from the little I have tasted of them, I find I like the contents of AMAZING STORIES very much.

The ultra-phantastic, interplanetary tales you publish are exceedingly thrilling, and while to simple souls like myself, the extramundaneous adventures of these super super-scientists appear highly improbable, it is always interesting and entertaining, not to mention exciting and inspiring, to speculate on their possibility a thousand or more years hence. If only Jules Verne, the Grand Old Man of scientifiction, were alive today what a delight it would be to have him among your contributors! A. Hyatt Verrill does lay it on a bit thick sometimes. But so did the author of "Twenty Thousand Leagues Under the Sea" in his times.

Some of your stories make me feel very, very small and snailfully slow—especially those in which the characters go soaring towards Mars in gigantic, bewilderingly fast, so-many-thousand-miles-a-second aerial vehicles. And our dear old earth, poor, puny thing that it isn't, seems to dwindle ever so much in relation to the staggering dimensions of space.

By the way, I do not think the name of your magazine sufficiently suggestive of its contents. AMAZING STORIES, without an intervening adjective, might mean many things—amazing *love* stories, amazing *crime* stories, amazing *war* stories—while yours are amazing scientific stories. However, as many of the stories you publish involve either love or war or some other theme perhaps the name AMAZING STORIES is right after all! I believe the magazine could be improved with better paper and more and better illustrations.

It might interest you to know that the initials of AMAZING STORIES, A. S., are the reverse of those of another one of my favorite magazines, S. A. *Scientific American*. And curiously enough, the former is pure fiction, the latter pure fact!

Ralph Garcia,
San Juan, Trinidad,
British West Indies

(The editors feel it a compliment and a pleasure to be awarded a new reader and so appreciative a one as you are. Don't mind if our authors "lay it on thick," as you express it. The old time authors of marvelous events certainly didn't lay it on half as thick as the scientists of today are doing in their wonderful developments. It may be a difficult thing to appreciate immensity, but on the other hand, it is not easy to realize what an insignificant body in the celestial world this earth of ours is, and of what inconceivably microscopic dimensions man is himself, the lord of it all. We think you are the first who has discovered the relations of the initials of AMAZING STORIES and its very interesting contemporary. —EDITOR.)

"HATS OFF TO AMAZING STORIES"

Editor, AMAZING STORIES:

Hats off to AMAZING STORIES, the pioneer in scientifiction and one of the eight (more or less) best magazines in print! If you, dear editor, expect many brickbats in this letter, you are going to be agreeably disappointed. If the first sentence is any indication, you shouldn't expect them as I couldn't throw you any large ones, conscientiously, if I tried. Leave the magazine as is.

Congratulations on publishing John Taine's latest story "White Lily" in your Winter Quarterly. I wish you would also publish or reprint all the rest of his stories, past, present and future, especially "The Purple Sapphire," "The Gold Tooth," and "The Greatest Adventure." Please print these if you can, either in the Quarterly or the monthly, and *give all of them cover illustrations.* They deserve it if they are half as good as "White Lily," which should have had one, certainly. This is the nearest I can come to a brickbat!

A few more suggestions for reprints are the following, and *please give each one a cover illustration:*

"Through the Dragon Glass," by A. Merritt; "The Life Everlasting," by Marie Corelli; all of Fitz-James O'Brien's stories you have not reprinted as yet; to my knowledge you have only published that wonderful story, "The Diamond Lens," by him.

In answer to one letter you stated that the sequel to "The Face in the Abyss," by A. Merritt would not come very soon. Do you know how soon? Will it come at all? If it will come sometime, it will be well worth waiting for (there is no doubt about that), but will it come at all and will you have it? Can you tell me about when you will have it? Please answer these questions as I am very much interested in this story as I am in everything by A. Merritt, truly the most marvelous author, beyond doubt, in the world, in my opinion, at least. Is that his real name, and is he French?

I admit this letter is rather long, but if you don't want to print it all, just print parts that might be of interest and cut out the rest; otherwise it is a contribution for the proverbial waste basket.

Worth K. Bryant,
406 North Third St.,
Yakima, Wash.

("White Lily" has not pleased everybody. Opinion was very much divided. We are publishing your letter in hopes that Mr. Merritt will see it and take the hint from one who is evidently an admirer of his work, and give us another story. As regards reprints—these we have almost abandoned; those which we have given, seemed always to have evoked a considerable amount of unfavorable criticism from our readers.—EDITOR.)

A CONTRIBUTION FROM SCOTLAND

Editor, AMAZING STORIES:

I had given me a copy of AMAZING STORIES, and was most interested in same and amazed at the imagination of some of your writers. There is nothing approaching your paper published in Britain today. Needless to say, I buy a copy now when the chance comes along.

A. E. Walton,
Westerlea, Cupar, Scotland

(We appreciate your expressions of appreciation; naturally it is pleasant to hear from Scotland, and to know that AMAZING STORIES is read there and is liked. The Atlas Publishing and Distributing Co., 18 Bride Lane, Fleet, E. C. 4 London are one of our distributing agents and can put you in the way of procuring copies.—EDITOR.)

THE EARTH IS NOT YET "AUSGESPIELT"

Editor, AMAZING STORIES:

Since I first saw your magazine, and it was one of the very first numbers, I haven't missed an issue, generally obtain it at the newsstand, but lately, to be sure of not missing any, have become a subscriber, and expect to remain one, as long as you keep up present standard, and I am able to spare the small coin.

Years ago when I first read Verne, "From Earth to Moon," I thought it must be the limit of imagination. Today your space-flying trips seem tame, even though you may reach the Milky Way, not to mention backyard excursions to Neptune or Jupiter.

Why is not the whole galaxy a unit? A small cluster of atoms circulating around a central body, and why is not this body, in turn, a speck, circulating around some larger body, and so on *infinitum?*

Why then, do your authors bother about playing in the home yard all the time? Is it because the speed of light is the fastest method of travel that their imagination has reached?

Could they not go just a little ways out in space. Annihilate gravitation, remain fixed in space, and just watch the stars as they go speeding by.

Why should it be so difficult to actually view past events? Just invent a telescope, powerful enough. Then, go far enough out in space, but of course it would have to beat light in pace. Then look back. We see the sun, for instance, as it looked eight minutes ago, we see stars as they looked, centuries ago.

You cannot say: "Impossible" because you admit that word has been eliminated, and rightly so, from your vocabulary.

I almost think I have enjoyed those stories from the microscopic worlds more than anything else, and surely they must be Gospel Truth in comparison with the fourth dimensional stories.

But by all means keep on. Space, for instance, has no limit and you have barely taken the first step into it. A Rider Haggard could not very well have written the "She" or "King Solomon's Mines" at this date, when the situs would hardly have been available. Old Terra is practically *ausgespielt* now for such stage settings, but your field has no limitation.

A. O. Ueland,
Haistad, Minn.

(We have any number of interplanetary stories accepted and you will find as we publish them, that in some cases the authors let their subjects go pretty far into space. It is a very curious thought that on some of the distant stars; if they have a good telescope they might now be looking at the Battle of Waterloo or witnessing the great initial epochs of the American Revolution, such as the little Battle of Lexington, or the greater one of Bunker Hill. You must not be too hard on the days of "terra" as you call our period. There is lots that is new, lots that is astonishing yet to be evolved by mankind on this earthy sphere of ours. It is not "played out." (Ausgespielt.) Wonders are being done by our scientists without their going out into space. If you like the stories from the microscopic world and feel that the microscopic world gives the basis for stories, then certainly the great sphere that we live on should furnish material for much entertaining writing.—EDITOR.)

SCIENTISTS ARE NOT MURDERERS

Editor, AMAZING STORIES:

Have read two issues of your magazine and found several interesting stories. I think Lemkin spoiled "Vitamine Z" by the ending. The idea of the doctor's copious notes not revealing his methods is preposterous. A fire that destroyed them would be a more appropriate *finis.* "The Man from Space" is enjoyable because Hansen avoids what most authors of interplanetary stories commit: warfare. Scientists are not murderers.

W. C. Benedict,
Canton, Penna.

(Scientists generally pursue a peaceful course of life, although the famous Webster murder in Cambridge, Mass., which occurred many years ago, was an exception—perhaps proving the rule. One of the greatest of the scientists of the present day refused to aid by his knowledge of chemistry, the fighting nations in the World War. But Science killed a lot of people in that war. The famous "Paris Gun," bombarding Paris from a distance of seventy-five miles and sending its projectiles twenty-four miles above the surface of the earth, approaching the vacuum of space, was a true scientific triumph, even if its principal achievement was the killing of innocent non-combatants—women and children.—EDITOR.)

ANOTHER ADMIRER OF DR. BREUER'S STORY OF THE GOSTAK AND THE DOSHES

Editor, AMAZING STORIES:

During the past few months you have published several stories that have served to revive my weakening interest in your publication. I therefore voice my appreciation in the hope that it may have some small influence on the publication of similar stories in the future.

I wish to mention first of all Doctor Breuer's "The Gostak and the Doshes." It is a tale of the first rank—one of the best that I have read in AMAZING STORIES for a long time. I have always enjoyed Breuer, but he is even better than usual in this story. As a fitting tribute to him I might say that he is a scientist with literary ability—two qualities rarely combined in your authors.

Then as a fairly close second there is G. P. Wertenbaker. The two by him, "The Chamber of Life," and "The Ship that Turned Aside" are both very good stories.

And last, there was Taine's "White Lily" in the QUARTERLY. Not so much science in it, but Taine at least knows how to write entertainingly.

Burris Cunningham,
Springer, New Mexico

(We hope that you have read in the Discussion Column the various opinions about Dr. Breuer's quite wonderful story. Its ethics and sarcasm apply pitifully well to poor, fighting humanity in our own world. Dr. Breuer is, as you say, a remarkable man possessing the capability of writing, one of the rarest of qualities, in addition, of course, to his high scientific standing. We are glad to hear you liked "White Lily." It was an extremely good story, although it did not have as much science in it as it might have had.—EDITOR.)

ANOTHER CALL FOR "THE SKYLARK OF SPACE"

Editor, AMAZING STORIES:

I am a high school student and am planning to be a Physicist, so naturally I read AMAZING STORIES and the SCIENCE AND INVENTION every month.

Now for the Criticism. I notice that your magazine has improved in the last few months. Although you lost an excellent artist when you lost Paul, I think you will be able to stand up under the loss. The cover is all right except for one thing and that is the name. I don't like to have people wonder why I read such trash as the AMAZING STORIES.

Hurry up with the sequel to "The Skylark of Space" which, by the way, was a masterpiece.

There's a question I want to ask. In the "Airlords of Han" it stated, if I remember correctly, that these people came to the earth on a meteor. I've wondered how they could accomplish that feat.

I think that your three best authors beyond a doubt are: Harl Vincent, A. Hyatt Verrill, and David H. Keller, M.D.

William Pardee,
207 E. Allegan St.,
Otsego, Michigan

(We now are using principally the work of two artists, Wesso and Morey, and we believe that they are very hard to surpass. We cannot tell you how to travel on a meteor.—EDITOR.)

A RAPID FIRE CURSER IN THE STORY "RHYTHM"

Editor, AMAZING STORIES:

I have just purchased the April edition of "our" magazine and the cover IS GREAT! Let's have more like it.

Mr. Cloukey's "Rhythm" is a masterpiece! It was exceedingly interesting and I found but one mistake in it. Mr. Cloukey says that von der Konz listened to the "rhythmic toy" for three hours, during which he mentally cursed Calvroon three trillion times. This is quite impossible; it would take a person about six hundred and three billion, nine hundred and twenty-two million, two hundred and forty-two thousand one hundred and ninety-nine hours (603,922,242,199) to curse a person that many times!

Forrest Ackerman,
530 Staple Ave.,
San Francisco, Calif.

(You can do things mentally which you cannot do in actual life. So the expression you refer to must be taken as strictly metaphorical, a metaphor being a comparison with the sign of the comparison omitted. The author might have said "as if" three trillion times, which would make it a comparison.—EDITOR.)

A VERY INTERESTING AND OUTSPOKEN LETTER FROM LONDON

Editor, AMAZING STORIES:

I have just finished reading your January, 1930, edition and it seems to me that in this particular issue there are a great number of extremely questionable points that need pointing to.

Take the first story "Fourth Dimensional Space Penetrator." Now at the time that the magnitude meter revolved harmoniously to the tune of nearly 12,000 diameters, the Doctor opened a valve and allowed free fresh air to enter the room! Now surely this is rather a weak method of ventilating the space. In the first place the sphere is then in a vial of hydrogen—so where is the pure air (oxygen and nitrogen) coming from? Secondly—their size is so small that they are able to see a near-by atom. How is it that large chunks of hydrogen—or even to give the author his point—pure air did not come barging in through the valve? Again, we are to assume that each atom of the hydrogen represents a solar system, so at that particular juncture the sphere was out in interplanetary space. Surely even in a microscopic solar system there is the same void—or relative void as in outer space! I am afraid that the above is very badly put, but perhaps you see my meaning.

Now when the electron had increased to the size of a golf ball, the machine was accelerated to catch up on the electron. Now the electron was revolving once every 10 seconds—why chase it?—why not cut into its orbit and wait for it to come round—surely quicker in the long run? Now here comes the big bump—the penetrator is traveling quicker than light!! The Doctor and Perkins are rather bucked at proving Einstein's theories correct, but yet they fall down on this one point. Sure our author has overstepped this time!

Well, sir, I have tried to make my points as clear as possible, maybe your authors or correspondents may be able to throw light on some of the above. Anyhow it seems to me that these stories of micro-cosmic states are rather making fools of your readers. They provide good reading, I admit, but there is one point that I cannot quite get over. When at school I was always given to understand that the definition of an atom is the smallest possible particle of matter, which cannot be broken up into any smaller particles of the same matter. What I mean is that a single atom of—say iron—could not be broken up into ten (may I coin a word?) deci-atoms of iron. I have always understood that if one were to break up an atom, all one would get would be charges or quantities of electricity and an atom of an element of lower atomic weight. In this connection we can turn to radium which discharges electricity or rays of energy of some type or other and slowly reduces to lead. Now surely if people (as an example) can live on an electron of an atom they themselves must be composed or built up on smaller atoms—which seems to me to be decidedly paradoxical. Take the definition of a point in geometry—a point is that which has no magnitude—merely location or place. One might as well be asked to bisect a point. Surely in this connection of micro-cosmic worlds fresh words are necessary as the various authors are basing their whole plots and arguments on absurdities. The whole thing is rather like the old verse. "Big fleas have little fleas upon their backs to bite 'em—and so *ad infinitum*."

Now after all that, I think a few words of praise would not go amiss—I met A. S. just a year ago, and personally my choice goes to the following: "Barton's Island"—a good piece of imaginative fiction; "The Chamber of Life," very interesting and enthralling besides being rather well written; the "World at Bay" and "Armageddon—2419, A.D." The story "The Flying Fool" although obviously absurd is all the same a human sort of story and rather depicts the ordinary man with his scientific learnings. Personally I consider your generally worst issue is June, 1929—half of the reading matter is Jules Verne's relatively uninteresting "English at the North Pole." "The Beetle Experiment" is the best, but rather poor, "The Radio Telescope" is pointless, and the other small fry, well not up to much. Mind you, subsequent issues have made up for this rather disappointing issue.

In the July, 1929 issue the "Super-Perfect Bride" is rather a good yarn with an unusual ending—a love story admitted and one without much science, but nevertheless worthy of a place in the magazine.

Please, Mr. Editor, cut down the number of serials—serials are O. K. in a weekly but tend rather to become disjointed in a monthly, especially a serial like "The Secret Kingdom," most of which I freely admit having skipped. This story

would be more in place in a travel magazine than in a scientific fiction magazine.

However, let me end by congratulating you on some very fine stories in the past and expressing a hope for good stuff in the future and a bigger magazine—at least, same size but smaller type—your type size and spacing are rather wasteful, you know.

Well anyhow, here's how and best wishes for success increasing by geometrical progression.

George J. Stamper,
98 Ravensbourne Rd., London, S. E. 6, England

(We are afraid that stories involving the fourth dimension may be termed a little more picturesque than plausible or even accurate. . . . We publish your letter hoping that the author, whom you criticize, will read it. But fourth dimensional stories and stories in which people change their size and go into other worlds of diminutive volume cannot be taken as true by anybody. So we see no danger of such stories making fools of our readers. Your criticism of "The Flying Fool" is of interest because Dr. Keller adds a charm through his narrations by introducing human nature. You repeat in your own words what so many correspondents have told us: that the magazine is improving. We are fortunate now in having some very good artists on our staff as you will recognize in our illustrations. A new author, who is a distinguished chemist, is going to submit his manuscripts to us and perhaps we will get some valuable material there, for it is not easy to write a good story based on what has become, within the last few years, a very difficult subject, namely, modern chemistry.—EDITOR.)

THE ROCKET IN VACUO

Editor, AMAZING STORIES:

I have just read "Explorers of Callisto." Upon reading discussions I noticed the letter of Mr. E. M. Hoskinson, pertaining to the recoil, I am moved to state that I have experimented along lines similar to his own experiments and have obtained results as he states.

Since there must be some medium or something tangible for a rocket blast to strike to produce movement, I fail to understand how a rocket discharge could produce such movement in a practical void.

As he, Mr. Haskinson, states, the Cutts compensator redirects the gas blast and produces instead of backward thrust a forward thrust sufficient, nearly, to offset the effect of recoil, which the bullet itself produces. And in my opinion, this just about proves to me that air is a necessity to the production of recoil.

However, even as Mr. Hoskinson states, I am not blind to the light and if anyone can offer definite proof I am willing to be convinced of my own and of Mr. Haskinsm's error.

J. Stickney,
105 W. Maynard, Ave., Columbus, Ohio.

(You are mistaken in stating that the gas from a rocket must have something to push against. It is purely a case of action and reaction, which according to Newton's law, must be equal and opposite. The gas from the rocket goes in one direction—and that is action. The effect upon the rocket is to push it in the other direction, and that is the reaction. Both are precisely the same in a vacuum as in air except in the matter of degree. The rocket will be driven better and faster in a vacuum than in the air. Professor Goddard has had occasion to bring out this fact in some of his writings.—EDITOR.)

CORRECTION OF A WIDESPREAD FALLACY

Editor, AMAZING STORIES:

As a more recent adherent of your excellent and stimulating periodical, I feel I need not add to the scores of laudatory letters you must receive from satisfied readers.

My purpose in writing is to correct, through your "Discussions" columns, a generally believed fallacy.

I have often been asked whether the "Lusitania" of tragic memories is floating about, a ghostly derelict, beneath the waves of the Atlantic. All buoyancy factors—bulkheads, woodwork, etc.—being assumed, correctly, to be either removed or fully counterbalanced by the pressure of the water and the mass of iron, let me assure such believers that the vessel lies at the bottom of the ocean, however deep it may be at that point. Let us consider a piece of iron. No one doubts that it will sink to the bottom of the pond, say 100 ft. deep. The pressure due to the head of water is about 43.5 lbs. per square inch. At 1000 ft. it would be 435 lbs. and so on. But some people imagine that the depth of, say, 5 miles, as the

pressure is about 5 tons to the sq. in., this enormous pressure actually supports a piece of iron. They forget that pressure acts evenly on *every* point of the piece of iron and the pressure acting upwards is neutralized by that acting down.

The question of "floating" boils down to this: can the water at, say 5 miles' depth, be so compressed by enormous pressure that its density equals that of iron, which has a density of about 8 grams per c.c.?

The coefficient of compressibility of water is about 0.000047 per atmosphere, that is, per about 15 lbs. per sq. inch, increase in pressure, giving the density of the water at 5 miles depth as about 0.036 gm/cc., which is nowhere near the 8 gm/cc. required for equilibrium. Consequently, the piece of iron sinks to the bottom of the ocean.

John S. Boyd,
The University, Glasgow, Scotland

(We are glad to publish this clear statement about the flotation of objects in water. The law, so well expressed by our correspondent, has one very important application in the handling of submarines. They have to be "nursed" along to maintain an even depth of immersion.—EDITOR.)

THE FOURTH DIMENSION. CAN THE SUN BE BLUE?

Editor, AMAZING STORIES:

This is my first letter to the "Discussions" Department. I have never read any stories in the past issues of AMAZING STORIES which excell the stories of the January issue. "Into the Green Prism" is a good story but it does not contain very many scientific facts. "The Sword and the Atopen" is a very good story, but the stories which excelled them were the "Fourth Dimensional Space Penetrator" and "When the Atoms Failed." The explanation of the fourth dimension in the former is very simple, although the material that the walls were made from, was not described. "When the Atoms Failed" is chock-full of new facts, and scientific humor. The author mentions the fact that the sun is blue, due to the intense heat. But in my opinion the light should be yellow, due to the millions of tons of calcium and sodium in an incandescent state which should impart a yellow color to the light. If a particle of any sodium salt is inserted into an electric arc, the arc will appear to be yellow. I would also like to know how the Martian ships were observed off in space if there wasn't any ionized air below it.

Carmine Gallo,
108 Village Road, Brooklyn, N. Y.

(Mr. Verrill's stories contain more ethnological and similar science topics than those of other writers, and these are well within the scope of AMAZING STORIES. Whether your views about the color of the sky are correct or not is open to discussion. The spectrum of the sun is that of white light, elements in the nucleus, etc., only go to give the Fraunhofer lines crossing the spectrum. We cannot answer for the Martian ships.—EDITOR.)

OUR COVER ILLUSTRATIONS

Editor, AMAZING STORIES:

I think the cover of the March edition was most unique. For a time it had me guessing what it was about. Who was the artist who made this? I can find no name on it. I also think your January cover was excellent.

The February's was all right, but the other two were more dignified. As for your artists, they are all good, but I think Wesso rates first. Morey has some good illustrations for stories, but some I do not like, *e.g.*, the illustration for "The Gostak and the Doshes." But those for "Callisto at War" are excellent.

Your stories were all good in the March issue. Part one of "The Green Girl" was very interesting, and I hope the second part is as good. "The Ship that Turned Aside" was very good also.

As to your authors, they are all very good. Jack Williamson, A. H. Verrill, and Harl Vincent, I think the best, but some of your new ones are right next to them. What happened to Stanton Coblentz?

"Discussions" are very interesting. They are the first thing I turn to, after I find what the cover is about.

Edward Ahrend,
Jamaica, New York

(The cover of the March issue was the work of the artist Morey. It was a difficult subject and elicited considerable discussion, while in the making. Mr. Coblentz has stories in the Spring Quarterly and in the May AMAZING STORIES. We are glad that you like DISCUSSIONS—there is much life in them and we like them too in spite of brickbats. "Skylark Three" is coming now.—EDITOR.)

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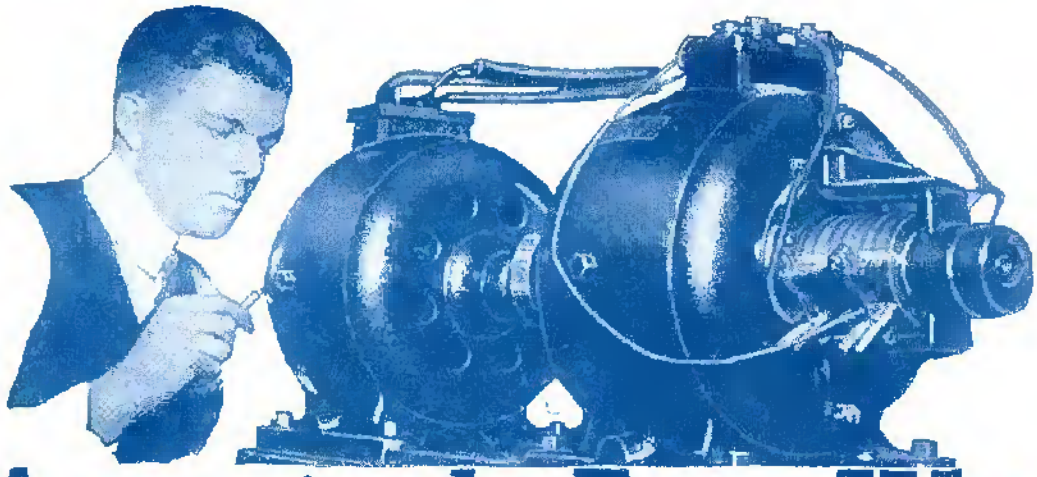

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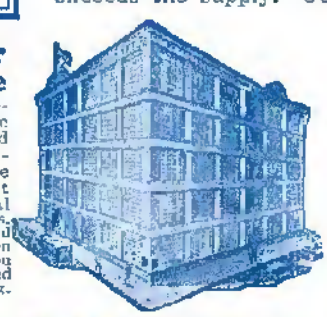

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