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AMAZING STORIES

HUGO GERNSBACK
EDITOR



Stories by
Edward Elmer Smith
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EXPERIMENTER PUBLISHING COMPANY, 230 FIFTH AVENUE, NEW YORK



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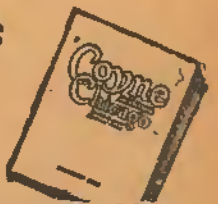
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PORTRAYING HIS IMMORTALITY

AMAZING STORIES

October, 1928

Vol. 3, No. 7

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In Our October Issue:

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Our Cover

this month represents a scene from the story in this issue entitled, "To the Moon by Proxy," by J. Schlossel, in which Emil's "proxy," in his final test before he is sent on his trip to the moon, meets the lion in combat, on equal grounds. Shorn of every bit of clothing by the fury of the king of beasts, the strange being looks like an armored soldier astride the lion.

In Our Next Issue:

THE WORLD AT BAY, by B. and Geo. C. Wallis. (A Serial in Two Parts) Part I. Interplanetary stories always seem to please our readers. The application of the fourth dimension, in this story, enables the travelers to make the journey to the moon and back and around the earth in an astoundingly short space of time. Our new author has given us a carefully studied out treatment of the subject of interplanetary travel, cleverly interwoven with romance and human psychology.

THE ANANIAS GLAND, by W. Alexander. What determines the extent of our truthfulness? It might very well be glandular action of some kind. Mr. Alexander has given us several unusual stories of psychological import, and in this very short story he cleverly works up an idea of extreme interest.

THE PSYCHOPHONIC NURSE, by David H. Keller, M.D. Instead of contenting himself with the conception of new mechanical labor-saving devices—generally involved in the human scheme of life—Dr. Keller always goes further. He gives us, in a perfectly natural manner, the ultimate psychological effect of his mechanical innovation or innovations, on the human being. Though he never destroys—or even temporarily puts out of commission—his newly developed apparatus, we are glad, when we finish the story, that we are still a little ahead of the invention.

THE EYE OF THE VULTURE, by Walter Kateley. It is an established fact by this time that the human eye is limited in its vision of the colors of the spectrum, just as the ear is limited in its range of sound appreciation. And just as the power of vision varies among people, so it must differ much more drastically from that of animals, birds, insects, etc. A bird, for instance, may not see all we do; on the other hand, many things within the bird's visual range, may be completely out of ours. In this story, a number of theories, novel and interesting, but seemingly founded on scientific grounds, are introduced.

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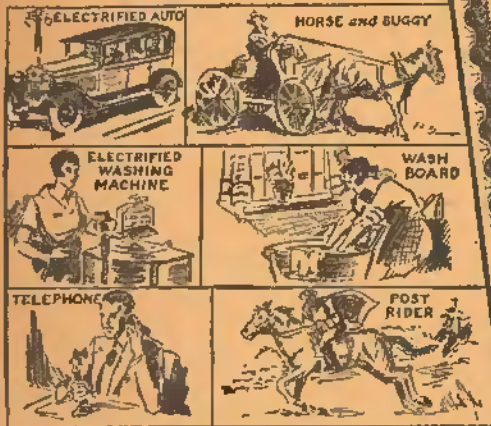
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Dept. 22A2
National Radio Institute
Washington, D. C.

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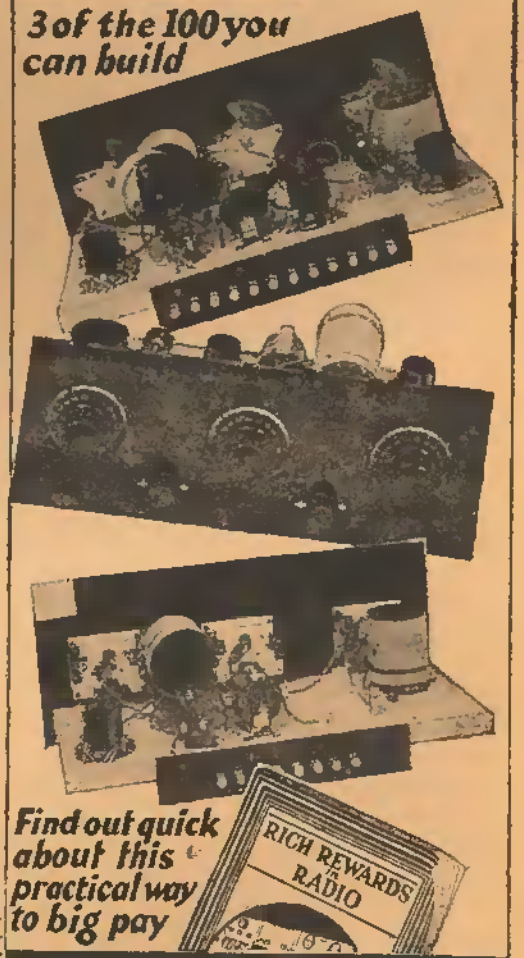
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AMAZING STORIES

THE MAGAZINE OF SCIENTIFUNCTION

HUGO GERNSBACK, *Editor*

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Editorial and General Offices: 230 Fifth Avenue, New York, N. Y.

Extravagant Fiction Today *Cold Fact Tomorrow*

NEW AMAZING FACTS

By HUGO GERNSBACK



ONE of the amazing facts of progress is that in very many instances, science develops a goodly amount of inventions which were never even dreamt of by the most imaginative type of fiction writers. Science has the trick of springing continuous surprises, which very often are far more amazing than the most amazing piece of scientification.

Not long ago, the Kodak people announced a brand new system of colored motion pictures. Now colored motion pictures are a novelty no longer. They were usually produced by means of ordinary films, hand-painted, or colored by other processes. The wholly astonishing thing about the new Kodacolor process, however, is the fact that the film is black and white. The light that strikes the film is white; yet, we get the most gorgeous colored motion pictures imaginable and entirely true to life in all of the colorings. You will see a bowl of goldfish in the most marvelous colors imaginable; and yet, the film itself is in black and white. The process in which the final result is achieved is intensely interesting, and is the subject of a detailed article, fully illustrated, in the October issue of *SCIENCE AND INVENTION*.

Suffice to say, the process is made possible by embossing the film lengthwise in such a way that the film itself becomes a mass of lenses, which are microscopic in size; yet which provide an entirely new optical system by which the final colors become possible.

Here then, is another invention which would have been denounced as extravagant fiction only a few short years ago.

And when we come to television, which has been the favorite subject for exploitation by our scientific writers, we are no longer astonished, because this imaginary television has now become an accomplished fact. The marvel of present television, crude as it is, lies in the fact that it is given by a revolving disc with a few holes in it, which faithfully brings a distant event to us, by wire or by radio.

But even few of our scientification writers thought that it would ever be possible to transmit color television; yet, recently this also has been accomplished by Mr. Baird of London, with a comparatively simple system. All Mr. Baird does is to divide his television disc into three parts, then he covers the spiral holes with red, blue and yellow transparent strips and exposes his subject in the usual way. He thus transmits impulses in various intensities, due to the color ranges. At the receiving end, we have a duplication of the transmitter, with a similar disc, and as we look at this disc in a darkened room, we obtain actual television images in colors. So here we have another great scientific triumph, which was not expected for at least fifty years.

Again, our best scientists, who seem to know all about television, predicted only last Fall that outdoor scenes could not

be transmitted by television for at least five to ten years. They contended that it would not be possible to transmit anything better than a human face or a moving hand by television impulses. Yet, only last July, the Bell Telephone Laboratories sent out television images of a tennis player, while he was playing in broad daylight. So the time is not distant when it will be possible for us to witness a ball game a thousand miles away. Nor will it be long before every radio enthusiast, sitting in his home, will be able to see a prizefight, in all its interesting and brutal details, while it is being fought.

So we see that science is catching up with fiction and prediction rather quickly, and our imaginative fiction writers will soon be hard pressed for new ideas in order to keep in the swim.

For a number of years, imaginative writers have been busy exploiting the Goddard rocket. Of course, most of them exploited the rocket for interplanetary travel. The time seems close at hand when such a machine will actually be launched. At this very moment, in Germany, extensive tests and experiments are being made along these lines. The Germans, von Opel and Sander, have already constructed automobiles propelled by rockets, which were used both on railroad tracks and the ordinary cement roads. Speeds as high as 160 miles an hour have been reached on rails, which is faster than any car ever traveled on rails before. And this is only a beginning.

This generation will see rocket-propelled aerial conveyances negotiating the trip from Berlin to New York in three hours. In order to do so, the machine will have to fly partially in a vacuum. The rocket machine will be directed heavenward and will have to climb up two or three hundred miles to reach the outer confines of the atmosphere, then it will straighten out and will begin descending in a great curve, with New York as its next objective.

Naturally, so as not to freeze and kill the passengers, they will have to be in airtight compartments. As a matter of fact, the entire inside of the machine will have to be airtight. The machine will carry its own air and oxygen and will generate its own heat.

The interesting point to remember is that at these tremendous speeds, entirely new and unforeseen things happen. A German engineer recently pointed out that at such speeds—that is, 1,000 miles an hour—the usual airplane wings would be useless. At such a speed an ordinary hailstone would go clean through a thin metal airplane wing as though it were shot through by a high-speed bullet. Consequently, these new aerial monsters of the future will have to be built of entirely new metals, tougher than steel, to withstand even the shocks of large dust particles, which, encountered at a speed of a thousand miles an hour, will raise havoc, due to their impact upon the machine.

All surprising facts, and as interesting as they seemed astonishing and impossible, only a few short years back.

The MENACE of MARS

By Clare Winger Harris

Author of: "The Fate of the Poseidonia," and "The Miracle of the Lily"

I



PROFESSOR HARLEY pointed to the steam that issued with a merry singing noise from the spout of the tea-kettle, then designated a glass of water that stood near, and lastly placed his hand upon a small cake of ice in a saucer on the table. Turning, he surveyed the class from over the tops of his horn-rimmed spectacles.

"Elementally speaking, they are the same, but they manifest differently. The molecules in the case of the former," he continued in pedantic discourse, "are in a state of violent agitation, rushing upward and outward. Their speed is terrific. Now in the case of the water, the molecular motion is less evident. The temperature is considerably lower and the molecular orbits are far more restricted, hence the manifestation in the liquid state. When we contemplate the last of the three states of H_2O , we find a solid of low temperature. In this cold, compact form there is still less freedom among the whirling molecules. Modern science tells us that the motion of molecules in the case of solid bodies is confined within so narrow a range that we cannot detect that they alter their places at all."

My eyes wandered involuntarily from the kettle, glass and saucer till they rested upon the very attractive daughter of Professor Harley who occupied a desk two rows ahead and one row to the right of my own. From where I sat, her bobbed bronze ringlets as they curled away from her ears and the nape of her neck, were far more interesting phenomena to me than steam, water and ice. Physics and chemistry were not to be mentioned in the same breath with Vivian Harley.

At the close of the class period, the professor read the following announcement, a copy of which had been posted on the bulletin board.

"As it will be an especially fine evening for astronomical observation, the college observatory will be open between eight and ten to any who may wish to view the heavens through the new telescope. Professor Aldrich will speak about the planets and stars in the field of the instrument."

I lost no time in finding out if Vivian Harley was to be at the observatory.

"I've got to go," she smiled ruefully. "Father insists upon it. I suppose you're going, Hildreth?"

"Yes, I'm majoring in the subject, you know," I re-

plied. "Maybe I could give you some astronomical instruction that would be more interesting than the learned discourses of Professor Aldrich."

"I fear even you couldn't make it very interesting to me." Her words were curt, but her brown eyes were smiling. "You see I am very one-sided in my tastes, and I happen to be greatly interested in father's subject, chemistry. I'm majoring in that, you know, and maybe I could give you some chemical instruction that would prove more interesting than the learned discourses of Professor Harley!" she added with a twinkle in her eye.

"Chemistry and astronomy be hanged!" I ejaculated in semblance of great ferocity. "Your father wants you to be at the observatory to-night and I intend to be there, so I'll see you at eight."

I was climbing the steps to the telescope balcony at the appointed hour. The Professor of Astronomy, surrounded by a group of some thirty students, was standing on the north side pointing out the constellation, Hercules, when I came up. It did not take me long, even in the dim starlight, to discern the form of Vivian Harley, as her eyes followed the direction of the learned man's finger with rapt gaze.

"She is interested in the subject," I said half aloud, "or else Professor Aldrich is proving more entertaining than usual."

I approached the dark group silhouetted against the interminable canopy of the heavens wherein blazoned the fiery host of suns innumerable. How insignificant seemed man, even as learned a man as Professor Al-

drich, when one could lift the eyes but a little higher and behold with one glance mighty Vega, Altair and Deneb. Yet I knew in my heart that much as I loved my astronomical pursuits, a certain small figure in yonder group of humanity was dearer to me than all the suns that shine in the

eternal ether and so tell us we are not alone.

"And so we believe there is an analogy between the universe of chemistry and that of the stars," the professor was saying. "Within a tiny scrap of matter lies hidden a whole atomic universe in ceaseless and terrific movement. This is infinite smallness, but we can comprehend the idea with finite minds. Let these finite minds of ours contemplate for a moment, infinite bigness. As everywhere throughout all space the conditions are repeated which we find within the atom, we can deduce therefrom that our own universe is an atom

IN this unusual story, the author has woven a most entrancing idea, and has literally studded it with any amount of interesting features that will keep you guessing to the final page. It is a different Mars story than the many that have been published before, and it will not fail to hold your interest throughout. The science contained in the story is excellent, and coupled with this goes Mrs. Harris' mysticism, always an added attraction in her stories.



The clouds continued to scatter until several fiery balls varying in red, blue and yellow light, were visible through the rift. Might it be that the inhabitants of Pleasantown were celebrating the cessation of the deluge in a most extraordinary manner?

of infinite bigness in which atomic worlds and systems come and go and progress through space in orbital movement as do the electrons of infinite smallness in the atoms they go to build up."

"Our universe an atom!" I heard Vivian gasp as I approached her side.

Apparently the idea had never impressed her before. She turned to me and her eyes were wide with wonder.

"Of course," I smiled, "and the sun with his family of planets is an atom, and the same planets are electrons. That sort of connects up your chemistry and my astronomy. Isn't that so?"

She turned to me with a preoccupied air and said slowly, "It is stupendous—and so plausible!"

"Of course," I replied, "it proves more reasonable than the laws of Newton which are being replaced in part by those of Einstein."

The student group led by the instructor, entered the observatory and mounted the spiral stairs to the telescope room where we took turns viewing Saturn. While Vivian gazed upon the ringed planet, I approached Professor Aldrich with this question:

"Is it beyond the hope of man ever to ascertain of what gigantic body our universe is an atom? Man is given but a very vague conception of the scheme of things if he cannot conceive the niche in which he has a place."

The scholarly man smiled wistfully and said as he laid a hand upon my shoulder, "My lad, we can never know the billionth part of where we fit into God's great plan. Here we are isolated in the midst of Infinity by the limitations of our five senses. They present a mere crack through which we obtain but the faintest suggestion of what lies beyond."

"But," I persisted, "by the very analogy you suggested when out on the balcony, might man conceive the nature of the gigantic masterpiece of which he is an infinitesimal part?"

"I grasp the significance of your question," said the professor with growing enthusiasm. "Yes—we can surmise something of the nature of that great body in which Destiny has placed us. In fact we can *know* at least this much. *It is a gas.* The proportional distances between the atoms (or solar systems, since we are contemplating the vaster cosmos) and their inconceivable speed, indicates a gaseous constitution. That much knowledge is vouchsafed us!"

II

TWO years passed. I had graduated and become Professor Aldrich's assistant, teaching freshmen astronomy. It was Vivian Harley's senior year. She was majoring in chemistry to be her father's laboratory assistant, but thanks to the inspiration of that night at the observatory two years ago, she had minored in my subject, astronomy, and gave promise of being a worthy aide to her future husband as well as to her father. Yes, Vivian had promised to be mine after her graduation in June, and it was now April.

Late in the afternoon of April 17th (a never-to-be-forgotten-day in history) I was crossing the meadowlands between the low hills that surround the country

estate of my maternal uncle, the late Senator Gilroy. His sudden death had brought relatives from all over the country to attend the funeral. Many had arrived by plane, for in the year 1958, travel by airplane was common.

I was, as I said, walking across the low meadows, entranced with the loveliness of nature, when I noticed a peculiar thing. The sun was very low over the hills, and I was cognizant of the fact that the setting sun always appears much larger than when it is higher in the heavens. But even the knowledge of this optical illusion could not satisfactorily account for the phenomenal enormity of the sun as it slowly sank to rest beyond the hills toward Pleasantown. The evening was uncommonly warm and I shed my coat and seated myself on the grassy mead, determined to enjoy a quiet evening amid rural surroundings, before returning to the companionship of friends and relatives at the Gilroy mansion.

It was during the magical moments between the setting of the sun and the appearance of the first stars, that I experienced an uncanny premonition of approaching disaster. I could attribute the foreboding to no physical discomfort other than to an increasing oppressiveness of the atmosphere, that was not unlike the sultriness of an approaching storm. I decided to watch for the appearance of the first star that should come into my range of vision over the western tree-tops.

"It will be Antares," I conjectured.

Then in far less time than is required to tell it, the sky clouded over and all prospective view of the heavens was temporarily denied me. The nightmare that-fellowed beggars description. Why I was not drowned I do not know, for the flood of rain descended in torrents, striking my face with such force that I could scarcely breathe. After several hours, how many I do not know, for I had lost all track of the passage of time, I was wading more than knee-deep in a turbulent stream that was rapidly rising about me, while occasionally I was struck by floating debris as I strove in the Stygian darkness to make my way back to the house. Something soft brushed against my leg. It yielded to my touch. I strove to hold it, but the waters tore it from my grasp and it was gone.

Gradually the downpour abated and I believed I had nothing more to fear from overhead.

"This isn't so bad," I assured myself, speaking aloud and comforted by the sound of my voice. "I'll wait until the stars come out and they will guide me to the house."

Suddenly the waters began to swirl and eddy around me. They rose and fell like the waves of the sea; occasionally they reached neck-high and I nearly lost my footing.

"Thank God my feet are on terra-firma," I cried, "otherwise —"

The ground beneath me swayed. The waters rushed up to meet me. For the next few minutes I knew not sky from water nor water from ground. I felt as if I were revolving with a mill-wheel, by far the greater part of which was under water.

At last I stood again waist-high in water, but Nature

had ceased her havoc. Earth no longer quaked, waters were not rising, and a faint light was suffusing the black sky.

"If I find Antares now," I mused, "I can get my bearings and return to the house to see what has happened there."

A small area of the clouds was rapidly dispersing. I fixed my gaze upon it expectantly, but was not prepared for that which burst upon my vision. A great red ball of fire hung in the heavens. For a moment I thought it a toy balloon, but such a bauble on a night like this was incongruous. In appearance it was about an eighth the size of the full moon. The clouds continued to scatter until several other fiery balls, varying in red, blue and yellow light, were visible through the rift. Might it be that the inhabitants of Pleasantown were celebrating the cessation of the deluge in a most extraordinary manner? Still it seemed to me that sane human beings were likely at this moment to be engaged in reconstructive work instead of wasting valuable time and energy in making useless aerial toys.

After the appearance of a dozen or more, the gathering clouds again hid them from view, but I had had sufficient time to definitely locate the house, in the upper story of which lights now gleamed faintly.

I plowed my way through the water and finally dragged myself wearily upon the stone veranda which remained a good foot and a half above the flood. The sound of excited voices assailed my ears from the upper floor as I crossed the threshold.

"I just know it's the end of the world," shrilled the voice of cousin Donna. "Poor dear cousin Paul (Senator Gilroy) is the lucky one. He lived almost as long as we're going to, and he escaped doomsday!"

The reassuring tones of her husband, Miles Tracy, came next to my ears, as I stood in my drenched clothing at the foot of the stairs.

"What's worrying me is what's become of cousin Hildreth. The last I saw of him he was setting out on a lonely hike, headed toward Pleasantown. I hinted he might want company, but he told me plainly that he preferred to be alone. Queer sort of chap, Hildreth. Is he that way because he's an astronomer or is he an astronomer because he's that way?"

"Which came first, the chicken or the egg?" laughed another male voice.

"But all joking aside," continued Miles, "we must send out a rescue party after Hildreth. The Lord only knows what happened to him during the climax of the earthquake!"

"Don't allow yourselves to become alarmed on my account," I called as I mounted the stairs and appeared before the astounded group in my wet clothing. "I've been taking a little swim and watching some toy balloons over Pleasantown."

Miles tapped his head significantly and looked from one to another of the members of the group as they crowded around me.

I was bombarded with questions from all sides, but Mrs. Gilroy insisted that I get into dry clothes at once before I attempt any narration of the events prior to and following the catastrophe.

III

THE rehearsal of events must have taken up the greater part of the night, but we retired eventually. When I awoke and looked at my watch, the hour hand pointed to ten. Ten A. M.! It was more like ten P. M. and hot—I had never been as warm in my life. The thermometer by my door registered 94° F. and the humidity was intolerable. My room, faced the east, so I hastily threw up the shades to see why old Sol was not on duty.

The eastern horizon was a lurid red, as if many miles away a great conflagration raged. Even as I watched, the heavy clouds were partially dispelled, and a sight, the most awful, barring one, that these eyes have ever beheld, met my view. The sun, increased to mammoth size, hung between the horizon and zenith, a veritable hell of blazing fury. Was Earth plunging into the fiery orb of day? Was this Earth's ultimate doom, after the prediction of astronomers, myself included, that a frozen lifeless world would eventually swing around a rapidly cooling sun?

Intelligent radio communication was almost impossible, but the disconnected reports that came from time to time, told of the tragic deaths of thousands upon thousands, who were unable to seek adequate protection from the scorching rays of the sun.

The guests of Gilroy manor passed the day in alternate panic and despondency. There is nothing to do in the face of natural calamities except to adjust oneself to them. Their incontestable force cannot be averted. The only thing that humanity could do during that first terrible day was to seek its cellars, if they were dry, and await the ultimate setting of the gigantic orb.

My thoughts constantly recurred to Vivian. How much easier would have been this catastrophe, if we could have been together. Although I had complete confidence in Professor Harley's sane judgment under any circumstances, I desired nothing so much as to have my fiancée with me.

As the day wore on, passed in the relatively cool depths of the cellar for fear of further earthquakes, we noticed a buoyancy taking the place of the former heavy oppressiveness that had seemed to weigh us down. The sultriness had given way to a dryness, very hot to be sure, but much less unpleasant than the excessive humidity that had characterized the night, morning and early afternoon. So light and gay did we feel toward the sunset hour, that we indulged in music and dancing. Frivolous it may seem to read of it, but man is so constituted that he can mercifully relieve overstrained nerves with various forms of relaxation, though he may know that the stress of fear and worry has not permanently subsided. And if this narrative is to adhere strictly to the truth, I must not omit a few words in regard to the discovery of the late senator's private stock, which I think deserves as much credit for having relieved the mental strain of the day as any natural reaction might have done. I can write of this in a perfectly unbiased manner, for I am a strict teetotaler, and this day spent in the subterranean depths of the Gilroy mansion was no exception to the rule. But as

regards Miles Tracy, James Urban and even my ordinarily dignified Uncle Mark Atkins, I can make no such positive assertion, and even Donna was not above suspicion.

The first inkling I had of it all was when Donna appeared suddenly from some remote part of the basement. As I watched her, I thought we were having another earthquake.

"Say folks," she called as she approached the rest of us, "I just got weighed, and glory be—I've lost 72 pounds! It pays to try dieting for reducing. I told you, Marian, (Mrs. Gilroy) you'd lose flesh if you cut out the starches."

The widow of the late senator recovered quickly from the shock of her guest's apparent loss of weight, and replied rather icily, "I think you'd better look at the scales again, Donna. There must be some mistake."

"S' fact," This from Uncle Mark whose belligerent attitude signified all too plainly that he was prepared to back Donna up in her assertion in regard to her loss of weight.

"Come in and see the scales if you don't believe it!"

Glad of another diversion from our gloomy thoughts, we trooped into the little side room in the corner of which stood a weighing machine, the platform of which Donna quickly mounted. The rest of us crowded around the dial, and with Donna's and James' triumphant, "We told you so!" in our ears, observed that the pointer indicated that Donna, a woman of apparently more than average weight, tipped the scales at precisely seventy-six pounds!

There followed a series of experiments that resulted in the undeniable conclusion that each one of us weighed only a little more than half of his or her former weight!

"The machine is out of order," I explained, but in my heart I knew differently, though I would not vouchsafe to tell these people what I suspected of the truth at this time.

IV.

A FEW minutes later, Miles approached me in a confidential manner, and lowering his voice to a whisper said, "I swear I didn't drink enough to hurt a flea, but I'm sure seeing things! Since it is now night time, I went upstairs and out on the veranda thinking it might be cooler, but—I'm in no shape to be about! Guess I'll turn in and sleep it off."

He was quickly gone as I turned in alarm and saw his rapidly receding figure climbing the stairs. He did not seem intoxicated. His step was steady, but emotionally he was a wreck.

As I reached the entrance-hall, he was still mounting the stairway to the sleep-rooms. Once I was minded to call and reassure him, but upon second thought decided to discover the cause for his consternation myself. I heard his bedroom door close; then I hurried to the front door and rushed out upon the porch.

I have said elsewhere in this narrative, that the sight of the mammoth sun was the most awful, barring one, that I had ever beheld. This is the "barring one." The night was bright as day, not the dazzling splendor of brilliant sunlight, but the clear cold light as of a thou-

sand moons, and that seemed to be literally what I beheld as I raised my eyes skyward.

Like one demented, I ran out into the open, regardless of the waters that had receded to ankle depth, and gazed aloft with bulging eyes. The welkin was a crowded galaxy of heavenly bodies of vastly varying sizes and degrees of brilliancy. All the starry and planetary universe had marched up to us during the cataclysmic events of the last twenty-four hours, or so at least it seemed!

"Nevertheless it is what I vaguely suspected," I muttered to myself. "No wonder we weigh less with the counter-gravitational pull of the stars and planets!"

Few of the stars twinkled. They shone with the steady dazzling splendor of suns, and many heretofore unseen planets encircling them were visible with the naked eye. The moon was not visible, but Venus, an enormous silvery disc, four times the diameter of the old full moon, occupied her part of the western sky, and through her streaked cloudy veiling, I caught fleeting glimpses of mountain peaks that would dwarf into insignificance the Himalayas or the Alps.

Shooting stars and meteors were more frequent than I had ever known them to be heretofore. In the few moments that I stood dumb with amazement, a dozen or more fell within my immediate range of vision.

By this time I heard the voices of the Gilroy guests from the porch, and judging from the vociferous exclamations, they too were cognizant of the proximity of the stars and planets. I returned to the house only to be bombarded with questions regarding my opinion of the present state of the universe.

I had a theory, but so daring was it in its scope, that I did not venture to voice it at this time.

"Let's get the radio and television into working order," I suggested. "We must learn something of the extent that this calamity has visited the earth."

With the very able assistance of Miles, who was finally fully convinced that he was not "seeing things" that were not an actuality, we succeeded in getting the radio into working order. There seemed to be nothing on the air but distress signals, but eventually through the staccato of one very remote but persistent call, we recognized the familiar voice of Professor Aldrich, whose reputation as an astronomer was without parallel in the country.

"—and so somewhere in that greater cosmos in which we are but an atom, has been experienced merely the transition of a substance from the gaseous, through the liquid to the solid state, but to us, the atom, it has been a phenomenon of such stupendous proportions that it is difficult for us to grasp the significance of it with our finite minds.

"Why has it never happened before? Simply because Time like Space, is purely relative, and a million years in the microcosmos may well be a second in the vaster universe, the macrocosmos, of which it forms so minute a part.

"And now we must turn our minds from the theoretical to the practical, for our time grows short. The proximity of the sun will make it impossible for humanity at present to inhabit any but the polar regions of

Earth, and because we are already living in the northern hemisphere, I suggest that we at once move our entire population and all available food stuffs northward by airplanes. There have been appointed throughout the nation many local headquarters for the arrangement of details pertaining to the great flight, for these details apply to your local station."

There followed a list of service stations and other directions followed by the deep, well-modulated tones of the national broadcaster:

"Friends, Professor Harley, the nationally known chemist, will speak to you now for a few minutes."

Vivian's father! I approached the radio in order not to miss a single word, when suddenly, with a crackling and sputtering, the instrument went dead. There followed an hour of frantic endeavor to get it to function again, but it was all to no purpose. The requisite material for the repair work was not available.

Even if only second-hand information, Professor Harley's talk would have given me at least a remote idea of Vivian's experiences during the cataclysm; but I consoled myself with the happy prospect of being reunited with her at the north pole.

V.

ON the beginning of the third day, after radio communication had ceased (as far as we were concerned), we were on comparatively dry ground. The food supply was low and we realized the immediate necessity of reaching the nearest airplane base, which was located at Chicago. The three small planes, that had brought the funeral guests to the Gilroy estate, sufficed to take them away together with the meager supply of provisions available, and shortly after noon my plane landed west of Chicago.

The reader may be able to form a vague conception of the united drawing force of the combined stars and planets that had marched toward us during those tragic days. We learned at Chicago that coasts all over the world had been alternately inundated and left high and dry by the waters which were subject to the pull of the heavenly bodies.

Four gigantic airships, each capable of carrying a thousand passengers (though for ordinary usage their capacity was limited to six hundred), were being rapidly filled under a great white canopy that had been erected for the purpose of cutting off some of the intolerable rays of the sun. Miles, Donna, cousin Marian Gilroy and I ran up to the gang-plank of the *Calvin Coolidge* just too late. A guard announced briskly that a thousand souls were already aboard the great round-the-world flyer, but that if we hurried we might board another. We raced to the nearest one several blocks away, and discovered it to be the ill-fated *Icarus*, that, like its ancient namesake, fell into the sea with crippled wings, though this one, contrary to its namesake, had been salvaged from the deep, though with loss of life. It had on the whole suffered little from this mishap, and was now once more ready for service. Evidently the reputation of the *Icarus* was against it though, for it was not filling as rapidly as might be expected.

"Let's try to get aboard yonder ship," exclaimed cousin Marian, pointing to where a beautiful ship the color of summer skies seemed to crouch ready for flight.

"It is the *Azuria*," said Miles, "the last word in speedy, luxuriant air-travel."

But even as we turned our back to the *Icarus*, the humming of the *Azuria's* engines came to our ears. Then slowly and majestically she rose, her three decks a black swarm of humanity, and soon, too soon, her blue hulk was invisible against the azure of the sky.

"What is the name of the other ship?" I asked the officer at the gang-plank of the *Icarus*.

"The *Celestia*," he replied, "but do not fear to board the *Icarus*. Since its overhauling, there is no safer airship."

We had no choice now but to cast our lot with the *Icarus*. I mopped my perspiring brow and leaned against the rail watching the workmen removing the canvas that protected the *Icarus* from the sun. I heard a voice at my elbow. It was Donna.

"The *Celestia* is coming this way. They are going to bring it alongside the *Icarus* before embarking."

Miles and Marian had joined us. They were watching for others of the recent group that had been at the Gilroy home, but I was ever searching for a possible glimpse of Vivian Harley, though I did not know whether she had left from the Chicago or the Philadelphia base, being located very nearly midway between the two.

The *Celestia* approached as closely as the spread of its wings and ours permitted and a man on board called through a megaphone:

"The *Celestia* is carrying 1,137 people. Have you room for the surplus?"

The captain of the *Icarus* replied that we had, and would be glad to take 150 to 200 of the *Celestia's* passengers. We waited, but there was no sign that such a transference would be made. The people aboard the *Celestia* were fearful of the reputation of the ill-named *Icarus*.

"Look," cried Donna excitedly, "there are Max and Ethel Sabin and cousin James and Uncle Mark on the top deck of the *Celestia*!"

In vain did Donna, Miles, Marian and I try to persuade our late companions to join us in our airship. They remained obdurate to all our entreaties.

At last the gang-plank was withdrawn and the *Celestia* winged her way skyward. The last we saw of her was a faint blur low on the northern horizon.

And last but not least, the *Icarus*, with 783 souls aboard, left the sun-dried earth far, far below and sought the relief of the cool high altitudes.

Through the long hours of the night, while Mars and Jupiter looked as if they would fall from the sky and obliterate us, we sped toward Polaris, occasionally seeing on the 2,000 foot level below us, great freight-flyers winging their way north and south like moving trucks of olden times, taking the paraphernalia of civilization to a new abode.

But we found ourselves in a dreadful predicament. The northernmost lands were submerged too far south

for humanity to live with any degree of comfort. The north polar region was nothing but water, dotted with a few rapidly diminishing icebergs. And this was to be our home, the abode of man who had at one time conquered the earth! What had become of the conquest of which he once so proudly boasted?

VI.

IS it possible for you of the new era to form any conception of the first year spent in our polar abode? It was, of course, a period of reconstruction. Man built for himself vast floating cities, lived upon fish and synthetic foods and enjoyed a salubrious climate.

In vain did I search the floating islands of our northern world for my promised wife, Vivian Harley. Terror gripped my heart. Could she have been numbered among the victims of the *Celestia*? That great air-liner, due no doubt to the fact that she had been greatly overloaded, had fallen into the Arctic Ocean where the northern coast of Greenland used to be. Not a trace of her has ever been found. Her fate should prove a constant reminder of the failure of fear and superstition against the triumph of reason.

But as soon as the luxury of radio communication could be indulged in, we of Polaria, as we named our combined north civilization, received a communication that was quite startling. The long summer day in which the sun never set during the early months of our sojourn in Polaria, caused us to be a little neglectful of punctual hours for rising and retiring, though I doubt if we were any more deplorably negligent in this particular, than were the Americans of the twentieth century, living where day and night were clearly defined. But one night, when the huge sun glowed on the eastern horizon, we Polarians who happened to be up and listening at that hour and tuned by chance to an exceptionally short wave length, heard the following message:

"This is Professor Richard Harley speaking over station OGICU. No, friends, I am not floating around the north pole just because it happened to be a few hundred miles nearer at the time of our catastrophe. I am living in a veritable Eden on terra firma, and this Eden is at the south pole! My opinion of folks who contrive, by years of unnecessary work, to save themselves a few hundred miles trip in a palatial air-liner, would not sound well expressed publicly. The new garden of Eden is a paradise. No, I am not trying to sell real estate. There are comparatively few of us here, but we don't want all of you to come. Possibly by this time you have worked out a feasible program for making the north polar regions comfortably habitable, and I suggest that most of you stay where you are, but there is room for 200,000 more down here in Eden. When you get your television sets functioning and can get a glimpse of this Utopia, I'll warrant that the north polar region will be a deserted place.

"This is Richard Harley of station OGICU signing off till tomorrow at this time."

There was no mention of Vivian, of course, but she must be safe or her father would not have spoken in so light a vein. I wanted to leave immediately for the south pole, but Professor Aldrich would not hear of it.

"The beginning of the six months polar night is not far off," he explained in voicing his objection to my going, "and we astronomers must be ready to observe and record the new and amazing phenomena that the enlarged stars and planets will present to us."

The long night arrived, but it did not seem like night to us, for the moon which is full and visible from the pole during the first part of the polar night, shed its cold, white, reflected light upon us. It occupied so large a portion of the sky, that astronomical observations were limited exclusively to it. Many fascinating discoveries were made about our satellite, but as this story is not especially concerned with lunar problems, I shall pass on to the mid-winter observations, when Mars and Venus came within the scope of our vision.

I shall never forget the time that Professor Aldrich and I first studied Venus from our new vantage. Like a great silvery Chinese lantern, she seemed but a few rods away. Her light was far brighter than that shed by the moon in the olden days. Our telescope revealed evidences of a civilization that had been blighted by the universal catastrophe. There had been a civilization, but now there was no life. We searched the polar regions with the telescopic eye, thinking the Venerians would have done as we did, but all over the planet there was evident only a scorched devastation.

"Wait until we see Mars," said the professor encouragingly, "this cataclysm has surely improved the condition of the Martians."

"I don't agree with you," I objected. "Whatever their previous condition, they were used to it. We cannot judge them by our standards. They are hotter than they were, and it stands to reason they are discomfited to as great an extent as we are."

"Possibly there is some truth in what you say," admitted the astronomer, "but I am inclined to believe this cosmic calamity will cause life to be more active on the red planet. But time will tell, and that time is not far off."

In the meanwhile television and radio had established regular communication between the north and the south, and it had been my great joy to see and speak with Vivian several times. I planned to leave for Eden as soon as the long night began in the Antarctic regions, for there were stars I wished to study in the skies above Eden. Flights between the poles even now were not infrequent, for many in Polaria were weary of water reflecting great balls of light, and longed for land and daylight. And some in Eden, lured by the descriptions of night in Polaria, flew northward.

VII

MILES TRACY had become an astronomy enthusiast and was with me virtually all the time in the great Polaria observatory. He seemed never to be weary of gazing at the planets. For weeks we had Mars under closest observation, but could detect no signs of life. This planet did not even present the possibility of life having ever existed previous to the change in the molecular structure of our universe from the gaseous to the solid state. The planet's surface presented only a conglomerate mass of crystalline red-

dish rock. On some parts of this strange world's surface, the sun's rays reflected ruby scintillations, in others great cracks and crevices suggested abysmal depths.

"Mars is deader than a door-nail," remarked Miles upon one occasion as we studied alternately the physiography of the huge world that hovered so near us in space. "He is less interesting than Venus because he does not even grant us the privilege of studying a past civilization."

Professor Aldrich had entered the observatory in time to overhear Miles' remark, and he surprised us with these words:

"Do not be too sure that Mars is a dead world. Life may not always be vested with the attributes with which our existence clothes it. What is life anyway?" he asked, turning abruptly to Miles.

"Why—er—er—let me see. Life—er—shows action, it's energy," stammered Miles.

"Exactly as I thought," snapped Aldrich, "you do not know. What do you say it is, Hildreth?"

"Life is the sum total of our forces that resist death," I replied, vaguely recalling something learned in college.

The professor looked at me pityingly. "Not bad as far as it goes, but have you two ever really associated life with radiant energy?"

"Radiant energy and vital energy are two distinct processes," I said. "Life manifests the latter. The sun, a source of radiant energy, is not alive as we understand life, although it is active." I turned to Miles who appeared rather non-plussed by our remarks.

"I believe, friends," said Professor Aldrich impressively, "that the primary function of the universe is *radiant energy*. Primeval matter must go on transforming itself into inert ash. This so-called inert ash, like the planet upon which we live, constitutes a very small portion of the universe. How great in size and number are the stars throughout space that are undergoing this transformation due to radiant energy! How small the inert matter upon which life, as we know it, can exist! Yet we lay such great stress upon vital energy, or life, which in every respect, in space, time and physical conditions, is limited to an inconceivably small corner of the universe. Primeval matter that is in the process of radio-activity is *really* life as the Creator meant it; this so-called life (*vital energy*) that exists in inert substance, is merely a disease of old material after its radiant energy is spent. It is a sort of fungus that infests matter in its old age."

Miles and I were speechless. Was Professor Aldrich going mad that he could speak of life, which included man's soul and mind, in such derogatory terms? Had a "fungus growth" caused the evolution of an amoeba into a man? Had a "disease of old age" built up a civilization from primitive cave-man communities to the vast cities of the twenty-first century?"

The professor smiled at our horror. "I suppose you two and millions like you have always thought the sun was expending its radiant energy for the sole purpose of maintaining puny "life" upon earth and the other planets. But, my dear boys, many of the planets are

not inhabited. Is the sun expending its energy in vain? Not a bit of it! It matters not whether the fungus grows. It may hang on where it can. It is a secondary matter compared to radiant energy, the real universal life!"

We were glad when the professor's footsteps became inaudible as he left the observatory.

"Crazy as a loon," was Miles' comment. "I suppose the excitement of the past months has been too much for a man of his years."

VIII

*"Many a planet by many a sun
May roll with the dust of a vanished race,
Swallowed in Vastness, lost in Silence
Drowned in the deeps of a meaningless Past."*

TENNYSON.

MARS, dead, inert, beset by old age, and without even the "fungus growth" of Earth! Was it better off than Earth? Which planet consummated the Creator's plan?

Such were the puzzling and depressing thoughts that came to me some time later, when I sought the telescope alone, and ruefully viewed the planet that my imaginative mind had always depicted as teeming with intelligent, active, progressive life, exemplifying a civilization older and therefore farther advanced than ours. I had expected the eye-piece to reveal a prophetic vision of Earth many aeons in the future.

It did not take long for both Miles and myself to lose all interest in Mars, but not so Professor Aldrich. Hour after hour he sat gazing at the lifeless world. We soon learned to let him alone and avoid his cheerless discourses on "radiant energy" and "inert ash."

The comparatively few remaining inhabitants of Earth, with but few exceptions, took up their abodes alternately at the poles, when it was *night* for six months. Either polar circle was delightfully balmy, the temperature ideal during the night that had been unbearable in days of yore.

The mammoth sun had been visible on the horizon for a week, when one time, upon waking, I heard the sound of excited voices and rushed out of my tent, which was located near the edge of Aldrich Isle (the name given to the artificial, man-made floating island upon which a thousand of us lived). The *Azuria*, which had brought a number of people from Eden, was ready to return to the Antarctic, and her captain had decided to leave at once. It necessitated speed on our part, for Professor Aldrich was very anxious to begin a study of the southern heavens and did not want to wait another week for the arrival of another flyer.

Miles and Donna decided to join us, but Mrs. Gilroy enjoyed the presence of a number of congenial friends, with whom she preferred to remain and try out an arctic summer.

A few hours later the flying palace, *Azuria*, had left the island-rafts of Polaria, headed due south, and six hours later the seared and lifeless plains of North

America lay in panorama below her. Hour after hour I leaned on the rail of the lower deck and watched the great continent slip by beneath me, as our flying machine sped along at the rate of 400 miles an hour. The thread of the nearly extinct Mississippi River showed faintly as we approached the Gulf of Mexico.

Over twelve hours after leaving Polaria we crossed the equator and for the next few hours the South American Andes marked our route toward the south.

It was during the hours of early morning, as we flew over the ruins of La Paz in Bolivia, that all who chanced to be watching the vanishing landscape, turned questioning faces to one another and asked unanimously the same questions.

"Do you see the streak of living vegetation?" and "What is the cause of it when on either side lies sterility?"

Why the path of life through a world of death?

The sight was amazing and held everybody at the ship's rails spellbound. A straight path of green, ten or twelve miles in width, like a swath cut by some gigantic scythe, stretched from La Paz to Valparaiso. Every eye was fixed upon the miraculous sight and many explanations were ventured.

"Underground water that hasn't evaporated like the surface water," suggested one.

"Cool polar air currents," said another, and someone laughed.

"I saw something move among the greenery," exclaimed a girl, "but I couldn't tell whether it was a human being or an animal."

"Imagination," was someone's verdict, and the question of human or animal life was dropped.

In slightly over twenty-four hours after the *Azuria* had left Polaria, it came to rest in the semi-twilight in the land of Eden. We acknowledged from our first glimpse that the continent of the south had been aptly named. It was such a paradise as man has long dreamed of. There have been grander, more rugged scenes, but for sheer beauty, this Eden could scarcely have been surpassed by the original.

In the garden that surrounded the Harley home, Vivian was waiting for me, a rather pale and troubled Vivian, whom the events of the past months had impressed with awe and bewilderment.

Not long after our reunion, an early date was set for our wedding, but we were soon to realize the truth of Burn's words concerning "the best laid plans of mice and men."

IX.

REPORTS from mail and passenger planes verified the observations of the *Azuria* in regard to the fertile strip of land in South America, though, according to the latest news, the streak had shifted slightly westward. And now not even the brainiest individuals could venture an explanation concerning the puzzling green path that extended from Georgetown to Buenos Ayres.

One time I walked into the observatory for the purpose of making some private observation. I felt it was high time that Professor Aldrich relinquished the tele-

scope to someone else. However, I did not wish to incur the enmity of the taciturn professor, for whom I felt an emotion akin to pity. I really feared that his constant dwelling upon the enigma of the uninhabited Mars was affecting his mind, so I approached him as tactfully as I could.

"Any signs of life on Mars, Professor?" I asked cheerfully, as I entered.

There was no answer and I felt indignation rising within me. I opened my mouth to voice my resentment, when he said abruptly:

"By 'signs of life,' I suppose you mean movement, and to that I can assuredly answer in the negative, but life, intelligence or whatever you may choose to call it (the appellation is immaterial), may be evidenced in other ways, and I say to you now as I shall soon state to the peoples of the two poles, that there are evidences of intelligence on Mars. Oh, I know what your reaction to my assertion will be," as I began to reply, "but I repeat, movement is not essential to intelligence throughout the Universe."

"Nevertheless," I said finally, "there is no evidence of anything ever having been done by intelligent beings on that planet. It is nothing but a huge pile of reddish rock of a crystalline nature; nothing but 'inert ash!'"

I uttered the last two words somewhat sarcastically, and an amused smile played about the professor's thin lips.

"The term 'inert ash' is hardly applicable to our neighbor Mars," he replied, "as you and the rest of the world will soon discover."

He left the observatory and I took my place at the eye-piece, which was directed, as I knew it would be, toward the red planet. There it hung in space, a mountainous mass of red rock crystals traversed by straight chasms and fissures, no doubt its "canals." Desolation, silence, and a more monotonous landscape than that on the moon!

"If Mars isn't a dead world, one can expect life in a corpse," I muttered. "That's the deadest looking scene I ever gazed upon!"

A few more minutes was all I could tolerate before shifting to a more interesting heavenly body. What fascination did Mars hold for Professor Aldrich week in, week out, for months at a time?

"Darn his silence," I blurted out, and then realized that the professor had returned and had evidently been observing me for some time.

"Locate Mars again," he said tersely.

I obeyed, for there was that in his expression that indicated he would not brook opposition.

"There is something the matter with the timing-gear," I said. "I cannot keep Mars in the center of observation without moving the telescope by hand. What's wrong?"

"Are you sure?" he snapped at me.

"Most assuredly. Let's get at it."

"We can do nothing now," he replied more quietly. "I have just heard by the latest radio news that seismologists have detected extensive earth tremors, presumably in the equatorial region of Earth. 'There is no great loss without some small gain,' so we can

be pleased that there are no human beings on that portion of the globe to suffer from the quakes. Also, since the earthquakes, the green streak in South America is vanishing."

"That is small consolation," I made reply. "Our situation is lamentable, though we have made the best of it."

Professor Aldrich drew out his watch, and upon perceiving the time, crossed to the radio, with which the observatory was equipped, not only with receiving, but also with broadcasting apparatus.

"I am scheduled to speak in a half hour,—will you—"

There came a crackling, splitting sound, followed by a roar. We reeled like drunken men, lost our footing completely, and slid together with all the loose paraphernalia to one side of the room. Well shaken up, but uninjured, we emerged not a moment too soon. With a thunder like the crack of doom, the great telescope, literally ripped from its foundation, fell where a few seconds before we had crouched helplessly. A second, splintering, cracking noise and the last I remember was the two of us catapulting through the broken floor into the story below.

X.

"OH, father, he is regaining consciousness."

These were the first words to greet my ears after a blank period of insensibility. I opened my eyes to behold Vivian bending over me, her eyes alight with loving concern. I was comfortably tucked in a bed in the Harley home.

"Professor Aldrich?" I asked weakly.

As if in answer to my question, the professor's voice sounded loud and tense from the opposite side of the room. "This is Professor Aldrich speaking from station OGICU."

And while I listened to the voice of the companion of my misfortunes, who had miraculously escaped with no injuries, Vivian and a nurse administered to my needs. As I ate my broth, I and the rest of a listening world heard the following from the lips of the greatest living astronomer:

"I have been severely criticized for maintaining too strict a silence; but it was my opinion that such criticism was less objectionable than the open derision that would have been mine, had I ventured to voice my conjectures in the beginning. Your ridicule would have interfered with my observations and delayed the solution of the enigma, which solution I am about to give you now.

"First of all, know that Mars is a living world; vital, selfish, malignant! He is not vital in the sense that Earth is—(Earth, a huge ball of inert ash covered with human fungi). He is intelligent as a *whole*, as an *entity*. He is so old that if he ever possessed organisms creeping about his once inanimate core, they have undergone a transmutation from vital to radiant energy and are an integral part of his superb unity. Can you not, my friends, imagine evolution on a vast scale having proceeded so far that human activity as we know it, will have ceased? Orderliness out of chaos (which is the goal of our activities now as

expressed in our organization processes) attained even to the orderly and systematic arrangement of the atoms in his vast molecular structure! He has reached that perfect balance between cause and effect, toward which all struggle is directed. He is an example of a perfect state of equilibrium, or possibly I should have used the past tense and said 'was,' for Mars, once sufficient unto himself, has been greatly discommoded by the recent alteration in the arrangement of the Universe. His adaptation to his environment previous to the cataclysm was perfect, but he has been thrown off his poise, so to speak, and has found it necessary to re-habituate himself.

"His first attempt to regain his former composure was by the expulsion of a protective ray against the rays of the sun. This ray nullified to a correct degree the intensified heat from our luminary. I discovered the existence of this ray whenever Earth lay between Mars and the sun. As its electrons swept past the surface of our globe they counteracted the solar rays affecting the Earth, in just the same manner as they did for Mars, and in the wake of the ray, Earth blossomed as of yore. This was the path of verdure you beheld in South America.

"This Martian protective ray, while seemingly effective, has apparently not been wholly satisfactory to Mars. It may have required too much continued effort on his part. We cannot know. At any rate, Mars, the planet entity, has hit upon another solution to his difficulty, and briefly it is this."

I had finished my broth and was resting quietly with Vivian's hand in mine. Her father paced the floor with nervous strides; stopped presently and came over to the foot of my bed. He smiled from one to the other of us and then said:

"I am about to succeed Professor Aldrich at the microphone, so I'll be going now. You'll hear me presently."

"—these earthquakes," continued Professor Aldrich's voice from the radio loud speaker, "are caused by a retardation in the speed of Earth in its orbit around the sun. This slowing-up process has taken place gradually, but not so slowly that it failed to cause severe shocks to the world. This diminution in the speed of our planet around the sun is not directly due to the recent rearrangement of the Universe, but is caused by a force exerted upon the Earth by Mars. Earth is held in an intangible but powerful grip by the malignant planet, held as a shield between him and the flaming sun. We are now traveling in an orbit that keeps us serving in the capacity of a huge sunshade to the planet Mars, and it would seem that Mars is happy to have us render this service. It is evidently less of an effort to hold us thus than to continue the emission of the protective ray, for Mars travels in his orbit at approximately 15 miles per second; Earth, 18 miles per second, a rather small difference.

"What can we do in our present quandary? Absolutely nothing. It is seldom that man has faced a problem impossible of solution, but the scattered efforts of mankind cannot vie with a unit-intelligence such as belongs to Mars.

"And now, radio listeners, I will turn over the microphone to Professor Harley who will throw more light from another angle upon this baffling mystery."

XI.

"FATHER'S conception is mine," whispered Vivian, "and I think before he is finished, it will be yours."

I pressed her fingers with what newly acquired strength I possessed, and presently Professor Harley's voice came to us over the radio.

"Friends of the radio audience of Eden and Polaria. Professor Aldrich has explained to you the mystery of Mars. I will try to make clear to you the puzzling features of the cataclysmic events of the past year and a half. The idea is not original with me, for Professor Aldrich himself voiced this sentiment prior to our worldly catastrophe. The theory that our universe is an atom in a vast material substance is too generally accepted to require reiteration here. But as to the nature of that 'vast material substance,' no man except one, has heretofore raised the slightest inquiry, it having been naturally supposed that such knowledge was beyond the ken of mere humanity. However, I believe there is no limit to the growth of man's knowledge, provided he obeys Nature's laws in attaining information. By comparisons of observations of the telescope and the microscope, we discover many startling analogies. The Universe, we find, approaches in constitution a gaseous substance rather than a liquid or a solid. The distance between our sun and the nearest fixed star is about 10^{18} cms., and this, when reduced in the same ratio, becomes 10^{-4} , which is approximately the mean free path of a molecule in a somewhat attenuated gas. On the other hand, if we magnify the tiny world of the atom by the factor 10^{22} , leaving all the velocities unchanged, we should then cause an oxygen atom, or any similar atom, to become of the same size as the solar system, and its planetary electrons would closely resemble Neptune and Uranus both as regards size, distance from the center and period of rotation.

"Now in the face of this startling similarity, we ask, 'What happened to the molecule of gas in that unthinkable vast Cosmos in which we play so infinitesimal a part?'"

"Simply this, friends, the gas became condensed to a liquid, passed completely through the fluid states into that of solidity. Steam to water, water to ice. That is the general explanation, though I doubt if the molecular constituency is our familiar H_2O .

"When the Universe was in the gaseous state, we had nothing to fear from Mars, but since the transition into solidity, he is uncomfortably close.

"'But,' I hear you ask, 'what additional harm can he do us by using our world as a shield between himself and the sun? The big catastrophe was not of his doing. The retardation in our orbital speed is a minor concern to Earth at present.'

"But is it? Do you relish being carried about in the clutches of a malign entity, subject to his cruel whimsicalities. Do you like being the particular help-

less tool that will further his every diabolical design?"

"Professor Aldrich has given me permission to announce to an unsuspecting world some of his most recent discoveries concerning Mars. Jupiter, who looks slightly larger than our moon appeared to us prior to the catastrophe, is undergoing a subtle change. The first thing Professor Aldrich noticed was the rapid growth of the large red area on the surface of Jupiter. This reddish band has always puzzled astronomers, and they have never known its exact nature, but since its recent rapid growth, it shows every evidence of being identical in nature with the substance of the planet Mars. All present indications are that before very long Jupiter will be a gigantic reproduction of Mars.

"Now the question is, 'Is this a form of colonization being practiced by Mars, or is it a change that Jupiter is undergoing as a whole?' At any rate, it can be considered as a form of conquest, for surely a planet is being conquered by another, when it is being made over into that other's likeness. What capers will we be expected to cut, may I ask, if Jupiter chooses eventually to shift us about as he wills, and we become the bone of contention between two mighty worlds!"

XII.

IT seemed to require an undue length of time for me to recover from the injuries sustained at the time of the earthquake, and the long antarctic day was far advanced before my marriage to Vivian took place. We planned to spend our honeymoon in Polaria, for I was receiving urgent requests by every mail from Professor Aldrich to join him at the observatory there.

One day in early February, Miles, Donna Tracy, Vivian and I were passengers on the *Icarus*, headed for the north polar circle. As the great flyer winged its way across the ruins of the United States, we were drawn irresistibly to the rail of the low observation deck. Our altitude was so great that we could mark few details, though far ahead on the north horizon we could make out the Great Lakes district. Suddenly the ship swooped earthward, veered to one side, struggled ineffectually to right itself and continued a steady drop, though not at a falling rate. Vivian clung to my arm in terror; Donna fainted. Pandemonium reigned over the entire air-vessel. Was the *Icarus* to suffer the fate of its namesake after all?

A white-faced officer appeared on our deck just as the plane lurched violently to the other side, carrying terrified humanity with it.

"We are not falling," were his first somewhat reassuring words, "we're being pulled down by some force we can't throw off. The pilot says he can't change her course an iota. The engines are working to their utmost capacity, but they can't keep her in the air fifteen minutes!"

Something *must* be done. Several mechanics among the passengers offered their assistance, but soon all realized that it was beyond the reach of human skill to control the airship as formerly. She continued a steady slanting course earthward.

"I didn't know the Great Lakes were surrounded by reddish sand," exclaimed Vivian. "I don't remember

having ever noticed any sand in that region before."

I strained my eyes for a minute scrutiny of the approaching landscape, and checked an exclamation of horror. Below us lay an area of crystalline rock exactly like what I had seen countless times through the big telescopes when I looked at Mars, and later at Jupiter!

"Vivian, Miles, Donna, wait right here!" I cried in tones husky with the terror I could no longer conceal.

There were but a few minutes left to us and I knew that time was our most precious possession. I rushed to the radio room, and to my amazement found the operator gathering his things together for flight.

"Have you sent out an S. O. S.?" I thundered at him.

"Yes," he replied.

"Did you follow up with details by radio?" I persisted.

"No. What good would it do? By the time—"

I did not wait to hear him through, but took my place at the instrument.

"This is Hildreth, on board the airship *Icarus*. We are being pulled slowly to earth into a Martian colony, latitude 45°, longitude 87°. Send help at once."

When I appeared again on deck, I must have had the appearance of a maniac, for they all backed away from me and shook their heads at one another.

"Jump," I cried, "everybody jump! Your parachutes will save you if you leap now. It is the *Menace of Mars!*"

"But, Hildreth, the ship is not actually falling," said the officer who had warned us in the first place. "We'll make a comfortable landing if a few more passengers don't go crazy and lose their heads."

There was no time to argue. I turned to Vivian. "You understand, don't you, dear?"

For answer she ran to the rail and leaped nimbly over the side. I followed her with anxious eyes. Her parachute was bearing her gently below.

"I'm with you, Hildreth," cried Miles. "Come on, Donna."

"Not on your life," screamed his irate wife. "I'll not follow the dictates of a crazy man!"

"Crazy or not crazy, over you go!" I exclaimed, and raising her bodily, flung her free of the ship's edge.

Miles and I followed immediately, for there wasn't a moment to spare. Already the ruddy gleam of the Martian crystals covered the north horizon like an undulating sea of blood, and ever closer to the crimson line approached the fated *Icarus*.

Our parachutes brought us down on the sun-baked Earth, where a scene of desolation greeted our eyes. Heretofore our vantage-point had always been aerial, but here we were in the midst of a scene that might have been taken from Dante's *Inferno*, with nothing but the clothes on our backs, and we could easily have dispensed with them, so terrifically hot was it on this barren desert. But with little thought at the present as to our own difficulties, we turned fascinated eyes to the descending airship. By this time it must be over the edge of the red border. Suddenly a lone figure separated itself from the great plane and fell like a

drop of water from a bucket; then another and another. The first to fall was running our way with superhuman speed, and as he approached, we saw that it was the officer who had warned us. His face was livid with terror and he was inarticulate. And now we observed that as the others leaped and landed, they did not rise as he had done, but remained, transformed into red rock, retaining the postures they had unconsciously assumed upon landing on the mysterious substance beneath.

ROOTED to the spot in abject horror, we saw the *Icarus* land, and then where it had been but a moment before, an air-navigator of inestimable beauty and utility, it lay a conglomerate mass of—Martian consciousness.

At the sight, Waite, the officer, found his voice:

"Run south as fast as you can, all of you! It is spreading in every direction but north."

His words were true. In two minutes we noticed that the blood-red metamorphosis was coming our way, and as it crept along, all the sun-baked ruins at its edge became transformed into its own likeness. The Martian curse was going to take the world and every living creature on it!

Five beings fled southward in a panic lest the Martian menace overtake them. Tired and foot-sore, we still sped on, for when we stopped to rest, the distance between us and our pursuer grew less. We dared not rest!

"Did you notice its northern boundary was the lake?" asked Officer Waite. "I think water puts at least a temporary end to its advance. Surely we'll come to a river and—"

I shook my head dubiously. "The rivers have dried up long ago."

It was getting dark, but even with the abating of the terrific heat of the sun, we had about reached the limit of endurance. We staggered on in drunken fashion, ready to succumb to the fate that seemed inevitable.

"Do you—suppose the red death is—worse than—this headlong flight—when we're nearly dead?" gasped Vivian.

"I don't know," replied Miles, "but I don't propose to merge my consciousness with that of Mars. I don't think it's death we'd suffer, but a sort of annexation to the awful entity that seems to reach out after the whole solar system."

"It's been coming faster since the sun set," declared Donna. "The sun seemed to retard its activities."

Donna had spoken truly. Run as fast as we could, we seemed able to keep only an even distance between us and the onrushing tide of horror.

"This can't keep on indefinitely," cried Waite. "I'm through. Wish I'd stayed with the ship. When I'm part of what's after us, I suppose I'll do my infinitesimal bit to catch you folks, but—I'm not going any farther."

Remonstrance was useless. The four of us dragged onward. We knew we would go on until sheer exhaustion ended our flight.

At this juncture I recognized a change in the land-

scape ahead of us. A rocky ridge lay across our path, and as we approached, we saw that it was the bank of a river, and to our amazement there was water, though many feet below its normal level.

"We'll try this," I said with decision. "It may be our end, but if we press on we can't last many hours longer."

"Unless an airship comes to our aid in response to the S. O. S.," said Donna.

I shook my head. "That is too big a chance to take. Into the river, all of you!"

We found, to our satisfaction, that the water was in no place above our heads and in most places scarcely knee-deep. It was apparent that soon no river water would remain as such in the temperate and tropic zones, but the deepest, widest rivers had not yet vanished entirely.

It was a brave stand and we stood defiantly with faces toward the north—waiting.

Then out of the night a crimson band, stretching from east to west, grew wider as we watched, and the star-light reflected from its many shining apexes gleamed like a myriad baneful eyes in the nocturnal gloom.

Presently a dark object leaped from the bank and stood for a second, a black mysterious silhouette against the oncoming crystalline tide.

"Waite!" I shouted.

"Not on your life! I won't wait for anybody."

In another second our companion, whom we had given up for lost, joined us in the river.

"It won't be long now, he said, as he sank to a sitting posture in the warm water of the river. "I could scarcely keep ahead of it."

And with Waite's last word, the Menace was at the river's edge. With ineffable relief we saw that the water laved the strange substance and receded unharmed by the contact. So here at least was temporary respite!

In a few minutes, sitting propped back to back, we were asleep in the middle of the river.

XIII.

WHO was the first to waken in the morning I do not know. It seemed we simultaneously became conscious of the growing heat of the fierce sun that blazed like a vast conflagration in the east. Hungry we were, but not thirsty. We thanked heaven for an ever available supply of drinking water. The red rocky northern embankment lay like some huge beast of the jungle, waiting for an opportune moment to spring upon its prey. The first question at issue was whether to venture southward from our watery haven after our long night's rest. Donna and Vivian were in favor of moving onward, for the very sight of the red Menace gave them the "creeps." But the men did not share their opinion. We expected hourly, yes, any moment, the appearance of a rescuing airship which would soon put many miles between ourselves and the evil entity that was gradually transforming a planet into itself.

A cry from Officer Waite caused us to turn with

apprehension toward the north bank, but we soon saw our error in direction. Waite was pointing to the west, a direction in which we had least interest, for the sun flamed in the east and our rescue plane was expected from the south. Nevertheless our lack of observation of the unexpected quarter might have been our undoing, for creeping steadily toward us from the west and on the *south* side of the river were the red crystals of Mars!

Suddenly a series of shrill whistling notes pierced the stillness about us. Again and again the staccato tones stabbed the death-like silence of the scene. Uncomprehending, we huddled together and peered futilely toward the blazing orb that nearly blinded us, and in whose heat we suffered intolerably. A moment later a familiar whirring sound apprised us of the proximity of an air-liner whose presence we could not see because of the glaring brilliancy of the sun.

Waite and I looked at each other dazedly, and then slowly a look of dawning comprehension spread over Waite's features.

"Code," he whispered fiercely, "Listen!"

The whistling notes *were* code and soon, out of the previously mysterious sounds, an intelligible message came to us.

"Leave river and run southeast as fast as possible. If we approach any nearer we feel the drawing power of the red Menace, which seems to act with magnetic force upon the metal parts of our ship."

Not a moment was wasted in carrying out the orders of the rescue plane. We climbed up the south bank and fled with all possible speed in the direction indicated. And it was indeed necessary that we hurry, for the long red glittering line from the west seemed bearing down on us with incredible rapidity.

"Vivian, don't look back so much," I warned her. "It interferes with your progress."

"I feel like Lot's wife," she said with a wan smile, "and I imagine my fate might not be very different, although this modern Sodom is somewhat livelier than the one of Biblical fame."

Soon the plane, a small one of twenty passenger capacity, seemed almost above us and we expected to see it land, but it failed to do so, and again the shrill whistle-code startled us:

"You must run faster and farther. We are on the border of the Menace's zone of attraction."

After our fatiguing experience of yesterday, it seemed that we had already reached the limits of our physical endurance, but when one is racing with death, he draws upon his reserve forces, and can sometimes accomplish the well-nigh impossible. So it was with our little group of five souls racing over the rough, barren plain into the face of a mammoth sun, its rays death-dealing in their intensity.

The plane landed and waited for us to board it and soon we were flying south, putting many miles between us and our pursuer. As we had suspected, the Martian terror had followed the north bank of the river to a point far west, where the shallow water had entirely evaporated. Here it had crossed and spread like an infectious disease toward the east, along the south

bank. Thankful though we were to be rescued, we saw no hope of saving the world at large. We took food and rest and returned to Eden to discuss with the leaders there what should be done. Professor Aldrich was at Polaria, and as a band of the living crystalline substance encircled the globe, our communication was necessarily confined to radio.

XIV.

WHAT would have been the fate of the earth had she not been visited with another mysterious phenomenon, can be imagined, for she was girdled on land by a great red belt of the Martian matter that was creeping stealthily over the landed area of the world. No human agency could have stopped it. But time soon proved that there was a Power to which even the Martian influence had to succumb.

Before we reached Eden, we were given a faint warning of what was to follow. The plane fought its way through a terrific gale and at one time had to land. The earthquakes that followed were so numerous and so violent that thousands of planes stayed aloft practically all the time to avoid the earth tremors that shook the planet to its core.

Then the deluge commenced and all planes had to descend, some with disastrous speed. As the down-pour increased, the quakes subsided. Darkness covered the face of the earth, even in Eden, where it was presumably the time for the long day. There have been many varying expressions of opinion as to the length of time the surviving remnant of humanity was buffeted by the winds, shaken by the quakes and half drowned by the floods, but the consensus of opinion is that it was about three days and four nights. And when the convulsions of nature stopped, we knew what glorious thing had taken place.

The following is part of the first radio speech broadcast by Professor Aldrich from Polaria, where he had been at the time of Nature's great readjustment.

"I now believe our Universe to be in a state of stability such as it has never enjoyed before. My observations of the relative distances between the stars convince me that it is now in the liquid state. Of course, in some chemical compounds, the liquid state is not the one most easily maintained at normal temperature, but for scientific reasons, too obtruse for me to enter into at this time, I believe the liquid state to be certainly more normal than the solid, and probably more so than the gaseous.

"Our sun, as the people of Eden can testify, is closer than of old, but from its recent escapade it has retreated with its accompanying planets half way back to its former status. We can truly say with the psalmist of old, 'The heavens declare His glory and the firmament showeth His handiwork.'

"The great upheavals, through which a few thousand of us have lived, were the act of Terra wrenching herself free from the grip of Mars, whose intangible power was forced to relax with the liquefying of the Universe. Neither I nor any other mortal living can rest assured of the stability of the Universe even now,

but, from the terrestrial standpoint, the arrangement will be ideal. The habitable portions of the globe will be somewhat shifted, but certainly there will be no great inconvenience to man. The only uninhabited area will be the torrid zone. Polaria and Eden will continue to flourish, but before we can occupy the north temperate zone, the Menace must be conquered."

XV.

MILES, Officer Waite and I felt an irresistible urge to be of the investigating party sent out to see what progress Mars had made on our planet. Our request to be part of a scouting party of fifteen in a small plane was granted.

We proceeded cautiously, keeping a sharp look-out toward the north, watching for a fearful red horizon that would warn us of the danger. By late afternoon, South America was rapidly vanishing beneath us. Had the Isthmus of Panama proved sufficient protection? Was yonder red line along the gulf coast proof that the continent of North America was a Martian colony?

The *Lindbergh* was pointed slightly west of north, flying high, but cautiously. We were on the alert to detect the slightest deviation from a straight horizontal course. We did not propose to suffer the fate of the *Icarus* if it were humanly possible to prevent it. The red horizon still threatened us, but we felt no undue terrestrial pull.

Finally a laugh from Messer, one of the crew, brought an inquiry from each of us, to which he replied:

"It is nothing but the glow of sunset, proving what over-active imaginations can do!"

We laughed rather sheepishly, but were secretly satisfied that we had erred on the side of over-precaution.

With the coming of night and the corresponding drop of temperature, we decided to make a landing on the ground, inhospitable though it was, and start again in the morning, when we could better see what lay ahead and beneath us. Much of the land was under water from the recent deluge, but we succeeded in finding a location high and dry enough to accommodate us for the night. We took turns keeping a lookout for the creeping danger from the north, but throughout the night those on guard saw nothing.

Scarcely was the first streak of dawn visible in the east than we were off once more, flying as slowly as possible and keeping an even altitude of 1,500 feet.

I think every one of us saw It at the same instant, so intently were we watching for the first indication of the awful presence.

"Any downward pull?" Waite's words snapped the ominous silence.

"Not a bit," the pilot responded.

"Funny. We felt it before this with the *Icarus*."

"Remember the *Lindbergh* has no exposed metal on her under surface," said the pilot. "We figured that would make a difference."

"That's right, but go easy," admonished Waite, whose recent harrowing experience with the red Menace made him over-cautious.

All eyes were on the red boundary, the line of

demarcation between Life and Death as we thought.

"Funny, but that line is not advancing one iota," declared Miles Tracy. "I've been gauging it by certain landmarks."

"It is deliberately waiting to lure us on to destruction," was the pilot's verdict.

"Easy now! Let's land," called Waite. "We can't find out its purpose from the air."

At a distance of a half mile south of the red line, the *Lindbergh* landed, and its crew proceeded cautiously toward the seemingly frozen waves of blood.

"I call this area the Red Sea," I suggested, to relieve the awful tension of the situation.

"A frozen sea of blood!" cried Messer in an awed voice. "What if it is the life-blood of all the inhabitants of Mars from time immemorial, crystallized into an evil entity!"

No one heeded Messer's fantastic utterance. In an unwavering line we marched steadily and silently on, even as the Menace had done before, though each man knew that should the waiting Intelligence from Mars choose to advance toward us, we should have no recourse but flight. And now we were scarcely a stone's throw away. On and on, and we stood at the brink of my so-called Red Sea, and still we lived!

"It looks the same," cried Waite, "but what's the matter with it?"

As he finished speaking, he picked up a stone and threw it onto the red. And now we stood agape, for the rock was not converted by the infectious touch of the red Menace. Instead it sank within an oozy, jelly-like substance that offered no resistance to its weight. A gasp of incredulous relief burst from the lips of each member of the party as it dawned upon all that the mysterious substance was no longer a crystal, and was impotent for evil.

"I guess the floods put it out of commission," remarked Miles. "Thank God it was vulnerable!"

I stooped to examine the substance. It resembled nothing so much as red vaseline. I hastily filled an empty match-box with the innocuous matter, intending to give it a chemical analysis at my convenience.

XVI.

NO untoward incident marked our return to Eden with the glad news that the Martian invasion was ineffectual. The next day I analyzed the small quantity of the Martian substance I had brought with me from the lakes district, and found it to be pure protoplasm; the essence of life in matter! I put it in a glass receptacle with the idea of keeping it as a souvenir and possibly of experimenting further with it, and left the laboratory.

In the dead of the night an unearthly howl reverberated through the house. I recognized it as issuing from the throat of Duffer, the German police dog belonging to Professor Harley.

"Old Duffer is equal to any occasion," I thought. "He will hold the assailant at bay until I get there."

With a reassuring word to Vivian, who had likewise wakened at Duffer's awful cry, I seized my automatic and searchlight. The perfectly apparent absence of further disturbance was less assuring than a commotion would have been. I cautiously pursued a direction whence Duffer's bark had first issued and discovered with fear and dread that I was going straight toward the laboratory. I flung open the door.

A red glassy mound was the first sight upon which my eyes fell. It was as if a sculptor had modeled Duffer from a ruby of colossal dimensions. The dog had been caught in flight and he stood facing me, a bloody statue of terrible beauty! All this I realized later, for at that time my eyes were holden to all except the dire aspects of the situation.

And now from the feet of Duffer the red crystalline substance was spreading; no longer red vaseline, but

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 textbook. Moreover, most of the stories are written in a popular vein, making it possible for any one 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.

1. What is the general difference in the motions of molecules in gases, in liquids and in solids? (See page 582.)
2. What substance is a good illustration or example of the above phenomenon? (See page 582.)
3. Is there an analogy to be drawn between our planetary system and the atom? (See page 584.)
4. Can we find an analogy between the universe as we see it and a gas? (See page 592.)
5. Can you find a suggestion of the perfected "televox man" and of what he may do in the future? (See page 603.)
6. How can a sound become inaudible without the undulations ceasing to exist? (See page 604.)
7. What are the practical uses of platinum, apart from jewelery? (See pages 630-631.)
8. What feature of the course of the Gulf Stream makes it affect the climate of the British Islands? (See page 639.)
9. What is this effect in moderating the cold? (See page 639.)
10. What is the name of the part of the great current which sweeps over to England? (See page 639.)
11. What condition of a heavenly body interferes with its spectrum analysis? (See page 658.)
12. In what two ways can you see your face in a mirror, when the image is produced by a powerful light? (See page 658.)

hard crystals of igneous rock. Fan-shaped, it was emerging from the confines of its glass receptacle. Without thinking, I fired two shots into it, but merely with the result that the growth was accelerated. Then I bethought me of the temporary impotency of the horrible stuff when water was used on it.

There remained now but a narrow aisle between me and the wall, *en route* to the water-faucet. With great agility, I ran and turned the tap. A growing pool at my feet kept me safe from the marauder, but I had no receptacle for water with which to dampen the ardor of the ambitious Menace!

At this moment Vivian and her father appeared in the doorway, too terrified to move, and still less to comprehend the unfamiliar situation.

"A hose," I screamed. "A hose or a tub. No, do not enter," as my father-in-law would have penetrated the barrier.

Without further hesitancy, he hastened to obey my request, and returning shortly with a few feet of hose, tossed it to me. It did not take long to reduce the crystalline protoplasm to its jelly-like state of ineffi-

ciency, but not before the area thus transformed measured approximately a square of ten feet. The red Menace, together with any portion of the laboratory that came into contact with it, was transported to the sea and dumped in. Not a trace was left in our part of the world. As for rendering ineffectual the red landed girdle of the globe, it was necessary, we discovered by experiment, to wet its boundary line every week, if Nature through rain did not do so.

And since the recession of the sun, stars and planets, due to the liquid constituency of the Universe, North America is habitable up to within five miles of the dread line. The five mile limit is advisable, because that represents the maximum distance that the Menace could spread in a night while an unconscious populace slept, ignorant of the encroaching peril.

Is Mars, the planet, conscious of his inability to convert Earth to his state? Many times I ponder over the peaceful effectuality of his conscious existence as he swings in space like a world. Is he better off—that is, is he more in tune with his environment than we poor strugglers of Earth? I wonder.

THE END.

DR. PAVLOV and AMAZING STORIES

In our August issue, which was on the press by the 10th of June, we published a story by Joe Kleier, entitled, "The Head." It seems strangely coincidental that several weeks after the publication of this story, which tells of a scientist who has found a way to keep a severed head alive for some hours, the famous

Dr. Pavlov, Russian scientist, should make public, in Moscow, the result of his successful experiments to do this thing. It is true that the story deals with man and the Russian scientist experimented with dogs. But if one is possible, there is no reason to believe the other is impossible.

DR. PAVLOV DEFINES CAUSES OF INSANITY

Russian Scientist, After Thirty
Years' Experiments, Discovers
Reaction to Nerve Stimuli.

Surprises Court by Frankness—Moscow
Doctors Keep Severed Head Alive
Four Hours.

By WALTER DURANTY.

Special Cable to The New York Times.

MOSCOW, June 21.—Unlimited possibilities are held out by the latest discoveries of the famous Russian physiologist, Dr. Ivan Petrovich Pavlov, who, in the closing years of his long life—he is 80 and has just returned to Russia from a triumphant visit to England—is perfecting a series of experiments which take him back over centuries of superstition to the Greek "father of medicine," Hippocrates.

For thirty years Pavlov has been conducting experiments with dogs to establish the exact scientific principle of their "conditioned reflexes," which in creatures of higher intelligence are, he

claims, the mainsprings of character.

By a painless process of fascinating interest but too long to explain in a cable dispatch, Pavlov has found that the animals react in varying degree to two sets of stimuli, positive and negative. Accordingly, he has concluded that they may be divided into two types—excitatory or sanguine, and inhibitive or phlegmatic.

Hippocrates, 2,000 years ago, upon a basis of observation without precise scientific experiments, divided human beings into the same classifications, sanguine and phlegmatic.

A generation ago Freud tackled the problem of human psychology from a similar observation basis, noting certain causes and effects without being able to adequately explain the principles beneath them.

Establishes Neurasthenic Effects.

In the past three years Pavlov, checking each forward step inch by inch, first with dogs and more recently with children, has established the following facts:

In an individual of sanguine type a nervous disturbance, if relatively mild, produces a neurasthenic agitation and excitement and if it is serious and prolonged a raving mania.

The phlegmatic individual, on the other hand, reacts differently. If the disturbance is mild he develops inhibitions and various forms of hysteria. If it is serious and prolonged he falls into a comatose or cataleptic state.

This sounds complicated, but it has wide and poignant importance because Pavlov's method permits a sensible and scientifically exact classification of the human types. Where the Freudians guess, Pavlov defines positively by experiment, giving the first rational explanation of nervous diseases and insanity. He opens new avenues to psychological research.

* * *

That a decapitated head can live, that its eyes can blink and its throat swallow four hours after being severed from the body, savors of "black magic," but that experiment was successfully carried out in the Moscow Brain Institute this week.

The subject was a dog, but Professor Chichulin, who accomplished the miracle, declares it equally possible with a man.

Before a young American physiologist, Dr. Horsley Gantt of Baltimore, they proceeded with the experiment, which is of great interest to humanity for three reasons:

First, it permits a careful, detailed study of the processes of death progressively throughout the body.

Second, it allows a study of the brain as an individual organ isolated from the rest of the body.

Third, through a blood-pumping machine, it points the way toward a hitherto impossible operative treatment of heart disease, which claims the greatest number of victims among elderly people.

To the MOON by PROXY

By J. Schlossel

Author of: "The Second Swarm"



LITTLE did I dream of so impossible a thing as a voyage out into interstellar space as, in my hot, stuffy room, I packed my bag for my two weeks' vacation. Rather my thoughts dwelt on my folks and old friends whom I would soon see again, particularly Emil Peters, who, I heard, had recently added yet another invention to his already long list. Had any one hinted that my eyes would soon behold the vast caverns and endless twisting labyrinths that honeycomb the moon, I would have thought that the sizzling heat which had ushered in this month of August had gone to his head. The picture of exploring the interior of the moon could awaken no answering desire in my mind. For me, man-made caverns were large enough, while traveling in the subway to and from the office supplied all the underground travel I ever craved. At no time did I ever express the wish to go gallivanting up amongst the heavenly bodies, and I would have viewed such an undertaking with alarm, had I been included in it. Emil Peters, I knew, had such ambitions; not I.

My bag finally packed, I swung it upon the floor from the bed, on which I had done the packing, and looked around the room to make sure that I had not forgotten anything. I had packed everything I wanted to take. With a sigh of relief because that job was done, I got ready for bed.

It was late. At the most I would have only a few hours of sleep. Tomorrow I would have to get up the usual time, lug the bag to the office with me, and finish up whatever odds and ends of my work I had left to do, and then hurry to catch my train, stopping only for a bite to eat if I had time.

With the exception of last year, when a friend of mine persuaded me to motor with him on a two weeks' tour through a section of Canada famed for its regions of great beauty—we got no farther than Montreal, on account of our thirst—I always spent my vacation at home with the folks on the farm near Glenville.

At the office it was generally understood that the first two weeks in August were mine. I had for the past few years always managed to arrive home on the first Saturday of the month, and they had come to expect me on that day. Either my father or my brother Bob would meet me with the car. On this Saturday I thought that I would be able to make the twelve-thirty

train as usual, but some work cropped up and I had to stay all the afternoon to finish it. I sent a wire to the folks, telling them not to expect me until the following morning.

THE train that Sunday morning slowed down and began to creep along at a snail's pace as it drew near Glenville. The conductor passing through said something about a heavy local thunderstorm during the night.

My brother was there at the depot waiting for me with the car. After the usual questions and answers, he started the car and we sped down the town's only street for home. Everything was glistening wet, puddles everywhere. Most of the growing things in the fields alongside of the road were flat. Nearing home, I noticed two or three uprooted trees on the top of a small hill nearby. I remarked that they must have had a terrific storm during the night.

"Terrific storm is right," he said. "It sure was fierce the few minutes it lasted. A hole seemed to be torn in the heavens, and it just poured down. After the first bolt of lightning, which lit up the whole countryside as if it were broad daylight, came the wind, then came the thunder that made the very earth tremble. I never knew anything to compare with it for concentrated fury.

"Mother was scared; she thought the house was coming down. It is a lucky thing for us that the

house stands in a sort of a hollow. A number of barns standing on higher ground were blown down, and the three-storied brick laboratory, which Emil built at the far end of the old Watson farm about two years ago, was totally destroyed."

I gripped my brother's arm suddenly, almost making him lose control of the wheel.

"He was not killed—" I demanded fearfully.

My brother shook his head.

"Emil," he said, "has not been there for months. He always preferred his old workshop. He had a telephone connecting laboratory and house, and gave his orders over it."

I let go of his arm and sank back in the seat with a gasp of relief.

"I don't think that there was any one in the laboratory last night," Bob continued after a moment's pause. "The dozen or so mechanics that Emil had brought here from

HERE, again, is the different story. And it is not at all impossible. The idea of a radio telemechanical man ten years ago would have been greeted with a storm of derision. Today it is taken as a matter of course, because in a measure, we already have him with us. When our great industrial corporations manufacture men of the Televox type, it is time for even the most hardened of us to sit back and wonder if our scientific writers are so well posted and up-to-date after all. You will find "To the Moon by Proxy" an absorbing story.



Fortunately for him, he did not glimpse the unknown thing behind the car, for this being was employed in gripping and raising the little car with its freight of milk-cans filled with the prohibited liquid. After he had lifted the car above his head at full arms' length, he ran a little way with it. . . .

the city and who lived at the laboratory, were laid off a few weeks ago. Emil hasn't been out of the house for months now, not since Olaf brought him back from his last visit to the laboratory."

"There is nothing wrong?" I asked anxiously.

"No. Olaf still looks after him; nurse, bodyguard and assistant; he is the only human being, aside from yourself, whom Emil can tolerate for any length of time."

"Good old Olaf," I murmured.

"What did you say, Mat?"

"Emil always was particular," I said with a grin.

"Nothing to brag about," he retorted. "Olaf is dumb and so are you."

My brother always held that I was very foolish to leave the country for indoor work in the city. I was searching my mind for a real wise crack, when he interrupted.

"That reminds me, Mat. Emil called us up Saturday night, I answered the phone, and he asked me to tell you as soon as you arrived to come right over. That was about an hour before we got your wire saying that you would be delayed. I called back, but Olaf answered. You know how Olaf answers the telephone—clamps the receiver against his ear as if he were trying to push it through his head and his mouth against the mouth-piece as if he were going to swallow it. As soon as I heard him on the wire I knew that it was useless for me to try to get a message through, but I told him to tell Emil that you had missed your train and would not be here until this morning; anyhow I repeated it about a half dozen times."

I wondered, as I clambered over the sagging wire fence which separated the Peters farm from ours, why Emil wanted me so urgently. The name Emil Peters, if your memory is not too short, is probably familiar to you, for the papers a while back featured him as an example of what grit can do in the face of physical disability—he is the "wheel-chair-scientist" whose latest invention in the fields of radio netted him over a quarter of a million dollars. The last time I was home, two years ago, he had been moping because he had come across an authentic report of an Austrian inventor, who was building a vehicle along sound scientific principles, in which he would soon attempt a flight to the moon. The few of us who knew Emil intimately, knew that he had long cherished the dream of being the first to make that identical attempt.

EMIL lived alone with Olaf in the old house which his father had left him. Olaf looked after him and administered to his every need. Emil was paralyzed from the waist down, almost killed himself when he was only ten years old, and Olaf considered himself to blame. Olaf had taken Emil to see a circus against the elder Peter's orders and there they had seen a man jump from a balloon with a parachute. The next day Emil tried to duplicate the feat with an umbrella from the top of his father's barn.

Olaf opened the door before I had a chance to ring. He nodded his head to one side of the room, where I saw Emil sitting beside a strange looking apparatus,

and held his finger over his mouth for silence. Knowing that Emil often carried out delicate experiments in the room, I tiptoed in. Emil looked up, turned some dials on the apparatus before him, and beckoned me over.

"I thought that you weren't coming this year, Mat. Your brother called up—"

I stopped him with a laugh.

"Bob told Olaf over the phone last night that I would not get in until this morning. He was sure that Olaf would get the message all balled up. Anyway, here I am."

"So I see," he said. "Get a chair and come closer."

"You're looking great," I told him, drawing a chair beside him.

"I can't say the same about you," he replied. "The city does not seem to agree with you."

"I am sorry to hear that your laboratory was destroyed."

He looked at me quizzically.

"You wished to see me?" I asked.

Emil cleared his throat and spoke slowly, as if carefully choosing each word:

"I wanted to see you before I started for the moon."

"What!" I cried, jumping to my feet.

"Why not?" he asked, and I thought that I saw a twinkle in his eyes.

"It is impossible!" I exclaimed. "It can't be done! Come, Emil, own up that you are only joking?"

"No, Mat," he said, speaking earnestly, "I am not. In this age of ours everything is possible. Ideas and beliefs are changing constantly to conform to the present day standard. What yesterday was accepted as an unchanging truth, is today looked upon with a feeling something akin to contempt."

"Maybe," I said with a smile, "that is the reason why every crack-brained theorist of today expects a hearing?"

"Mat, let me finish."

"Finish?" I echoed, glancing swiftly down at the blankets that so snugly encased the lower portion of his body. "Haven't you said enough already?"

I could have bitten my tongue in two when I saw the agonized look that swept across his face at those words. Like a punctured tire he seemed to collapse in his chair beside that strange apparatus he was facing.

"I am sorry, Emil," was all I could say.

He looked up.

"So you think that I should forego my ambition, give up my dream, just because I am physically disabled?"

"Attempt anything else; the moon voyage is impossible. I don't believe that your mind can grasp even a fraction of the hardships you would encounter in an alien world. Recently men have tried to conquer Mt. Everest, a task equivalent to crawling over an ant hill compared to a journey to the moon, and have failed. Even the hardy Arctic explorers, men whose bodies are as tough as leather, who are inured to the extremes of every physical discomfort, who have steel-like sinews and an all-commanding will, would shrink before a journey of such appalling magnitude. What chance

should I accord you? You have not left your chair unaided for nearly twenty years."

The sagging figure on the chair before me shot erect. His head snapped back. He laughed. It seemed as if he would never stop. Tears were beginning to roll down his cheeks as he tried vainly to stop it. I sat there amazed. Had I been making a fool of myself? I wondered. Or, perhaps, I was the butt of some joke. I did not relish that thought either.

He quieted down. Finally he managed to gasp:

"That's just it, Mat. How you happened to strike it exactly on your first guess is more than I can see. A will and steel-like sinews is right. If you would have let me finish, I would have explained it all, even to your satisfaction."

Seeing the look of amazement still on my face, he started laughing again. I do not remember ever seeing his face light up so. He continued to chuckle for a few moments more, as if enjoying some rare joke.

"Oh, Mat! Mat!" he burst out laughing again. "Please turn your face away or shut your mouth and take off that dumb look. It's enough to turn a solemn-faced owl into a laughing hyena."

I snapped my mouth shut.

"But the will and steel-like sinews, Emil?" I insisted; for the thought of being the butt of some joke still rankled deep. "You might have the will, but you certainly lack the sinews, don't you know?"

"Yes, I know it, Mat," he answered bitterly. And just as a wet sponge is drawn over the surface of a slate and wipes it clean, so that sobering thought passed over his features, wiping away the laughter and taking the twinkle from his eyes. He whispered intently, more to himself than to me, "What could I not do if my body were only as sound as yours?"

Then he raised his hands to the skies and demanded appealingly:

"Why in the name of all that is merciful should I, I who cannot move a step without aid, have that burning ambition, that unreasonable obsession to attempt to cross that tremendous void which separates earth from the sun's fellow children!"

At this outburst, I could only gaze blankly at him. I did not know what to say.

Ignoring me entirely, he continued:

"NIGHTLY would I wheel my chair beside the window and gaze out at those twinkling points of light; thinking, planning until my poor head throbbed with a leaden pain. It was all to no end, I could not see my way out. The ambition to cross that void had now become a passion, it was literally burning my body up. And yet, as I now look back, it seems so ridiculous that I, a mere cripple, should even dare to dream of crossing that absolute void.

"I suppose, if my mind could have been analyzed then, it would have shown that I, to bolster up my fast crumbling ego, had unconsciously decided that I must perform a miracle to place myself on a par with the rest of mankind in my own estimation. I gave no thought to my inventions which had already lifted me high above the majority; what I wanted to accomplish

was something physical. Even to-day I take greater pride in being able to chin a crossbar twenty-five times, Olaf lifting me up, than in all that I have accomplished mentally. But then, in moments of acute depression, there would come over me a feeling that I was nothing but one of Fate's jests!

"The thought 'How was I to do it?' kept drumming in my head, day and night. My hours of sleep were simply packed with answers to that question. Many a fantastic and some really amusing dreams showing how easily it could be done, were mine. Every thought and movement was directed toward that point. I clearly recall one fantastic dream:

"Getting together enough dynamite to build a pyramid about fifty feet in height—I was always of sound physique in my dreams—I seated myself on the top and exploded the lot. With the speed of a bullet I rose through the air, the higher up I got the faster I seemed to go. The earth dwindled away beneath me. Looking up, I saw the moon almost directly overhead. I hoped that I would miss it. But I didn't. I just grazed it and splattered half of myself over the surface of the moon, but that did not seem to hurt me or put me to any inconvenience whatever. On and on the remaining half of me plunged through space. A comet suddenly appeared, I felt its attractive force grip me and I whirled along in its wake. It was heading for the sun, passing close to Venus, and gave me an opportunity to study it. The speed of the comet increased as it drew near the sun. Around our luminary it whirled and went on its way out to the depths of space. In rapid succession I saw Mercury with its deep cracks like a dried ball of mud, Mars with its canal-like markings, the satellites of Jupiter and Saturn, and then out into space. This and many dreams in like vein were mine.

"It is an old story, even to you, Mat, how I delved into thousands of books for a clue that would help me solve my riddle. Impatiently I would await the latest books and magazines that were likely to deal with those subjects. I can still feel the keen disappointments that were sure to follow a careful search through those printed columns, for everything I read on that subject made my ideas seem more hopeless.

"Even if it were possible to construct a vehicle to leave earth, an insurmountable barrier in the form of the changing views regarding the question of speed presented itself.

"Not so very long ago it was considered foolhardy to drive an automobile traveling at the speed of ten miles an hour; the driver was considered a danger to the community at large; a fit inmate for an insane asylum. But to-day you can sit behind the wheel of your car and jog along comfortably at thirty to forty miles an hour, and think nothing of it. When your blood is hot, due, no doubt, to courage in the bottled form, you think nothing of taking a ten-to-one chance of attempting to race an express train, running a mile a minute, to the crossing.

"With the aid of an excessively high-powered racing-plane, one man attained a speed of about three hundred miles an hour. But, when going round a curve at that

speed, the centrifugal force knocked the aviator unconscious.

"In order to leave the surface of the earth to go to a neighboring body of our solar system, it is necessary to attain the initial velocity of seven miles a second, just eighty-four times the highest speed attained by man. If the centrifugal force of a high-powered racing plane is capable of knocking an aviator unconscious, what would the effects be on a man in an interplanetary ship, torn away from the gravitational pull of the earth, at the velocity of four hundred and twenty miles a minute?"

He looked at me inquiringly. I did not know whether he expected me to answer or not.

"It has been computed," he continued, "that the gravitational pull on the occupant of an interplanetary ship would be just about the same as if a fifty ton weight dropped none too gently upon him, crushing his body instantly into a mass of unrecognizable pulp.

"So that was to be the end of my hopes, of my dreams! The heart-rending disappointment of it. What difference or hindrance was my crippled body now? As far as the fulfillment of my ambition was concerned, there was none, none!"

"I don't fully understand you, Emil," I muttered weakly. I had been sitting there all that time as one in a deep trance, listening.

"No difference whatever," he answered himself, irritated, it seemed, at my interruption.

"But what do you mean?" I persisted.

"Mat," he said gravely, but with a wan smile that took the bite from the words that followed, "often have I listened to you until I was bored nearly to death by your senseless chatter; now it is my turn; so don't interrupt me; just listen."

"Just as you say."

"That way proving impossible," he continued, "another route presented itself to me! How sorely was I tempted to travel by that way, to lay aside the encumbering folds of this useless flesh and so be free, free to go where I willed!

"You, Mat, with your sound body, can never hope to understand a loneliness so intense as that of being shut off from the rest of the world by a physical disability. I was lonely and depressed and discouraged. I all but gave up in utter despair.

"Then came the night when everything was at its blackest. I was ready to give in. Slowly I wheeled my chair to the window and gazed out at those mocking stars; at least they were still within the reach of my sight. But what a pitiful consolation that was! Steeped in the darkest melancholy, sinking down, down, down, into the very bottomless pit of mental torment, plumbing the depths where no ray of hope can ever penetrate, I prepared to give up the struggle and go by that other route, the route called 'Death!'"

"Not that way, Emil!" I cried.

HE ignored my outburst.

"As I was saying, I was ready to go by that dark route, yet I did not care to leave my post by the window, to go out like a snuffed candle. A deadly

poison, I thought, was about the easiest way. Then I thought of you, Mat. I wanted you, my only friend, to know why I took that step. I thought of sending you a letter, but words on paper are so meaningless. I didn't want you to think of me as a coward. I had many little things I wanted straightened out after I was gone, and I wanted some one—you—to act for me.

"Without the slightest warning, the solution to my problem came to me in one illuminating flash. It was a way to visit the moon without the slightest danger.

"So simple! Why didn't I think of it before? All that was necessary was a will and steel-like sinews; no, not steel-like sinews, sinews of steel. Why, to go by proxy, of course!

"Life for me suddenly took on a rosy hue. This is the mechanical and wireless age. Hearing, seeing and doing can all be performed mechanically. The vast strides that science has taken, particularly in the fields of radio, have made my task comparatively simple. I, who knew a little about the mysteries of radio, saw in my mind's eye a dozen ways to go about it.

"Open-eyed I sat there throughout that night and far into the next day, dreaming glorious dreams of possible success. It was all so clear and vivid. Each thought fitted itself into its place, just as the parts of a jig-saw puzzle do.

"First, remembering my own imperfect body, what would this mechanical proxy of mine look like? It must be so built that it could climb over any obstacle. Instantly there flashed into my mind the creatures of the insect world to model my proxy after. A spider came to the forefront, a huge metal monster, standing some thirty or forty feet high, complete with eight legs, two of which could be used in lieu of hands. But this seemed too crude after I had given it some thought. A hundred different forms could be adapted to suit my requirements. Then, remembering that my proxy was to be earth's sole representative, I decided that I would make it as human-like as possible."

"Do you mean to tell me," I incredulously demanded, "that all this talk is merely about some fool mechanical doll you are going to make?"

"Yes, Mat. But I'm not going to, I have made it already."

"You—you have finished it?"

"Exactly. And I am proud of it, too. It is the top-most pinnacle of mechanical perfection. Fit, indeed, to represent the planet earth," he ended, his voice vibrant with pride.

For some moments I intently studied the figure of my friend seated on the chair in front of that strange apparatus. I had to admit to myself that he had changed much, both in the confident poise of his body and the almost cheerful aspect of his features. He wore the air of a conqueror on his throne, one who had found life worth while. He was so different from the gloomy and dispirited individual I had known when I left him two years ago.

"What does this clock-work man of yours do?" I asked, having nothing more appropriate to say. "Do you have to wind it up often?"

"Mat," he said, a slow smile lighting up his features,

"you will be the death of me with your foolish questions. Surely you don't imagine that I have been wasting my life making a toy? Even though it is made out of metal, it is not a mere automaton; it is my artificial body, one that will work jointly with this useless lump of clay chained to this chair. It will be my substitute in every material sense. I will be its will; it will be my body."

A look of bewilderment settled on my face.

"The latest ideas of to-day," he kept on, "have gone into its construction. It is directed and operated by wireless, the beam principle."

"But the radio of today, the transmitter and receiver combined, is far too bulky to fit into a figure of the average man's height and girth, Emil," I butted in.

"No, it isn't. That is, unless you mean the apparatus you are familiar with. I have refined it to such an extent that it is but a fraction of its former size.

"My proxy, thanks to radio, possesses both voice and hearing. Radio television provides it with sight; that is, it enables me, sitting here on the chair, to see through its artificial eyes. Radio telemechanics, or wireless control at distance, guides its legs, arms—in fact, every movement of the body. It now possesses all the endowments of a flesh and blood body, everything except the senses of smell and touch, which I have considered unnecessary.

"I have tried to make it as strong as earth's strongest, only to discover after many repeated failures, that it could not be done. It came to me quite as a shock to learn that metal cannot stand as much strain as the body of an insect, if taken in proportion to a mechanical apparatus of man-like size. I realize now with a feeling of awe that the little ant is one of the strongest living things on the face of the earth when its size is taken into consideration. The mere fact in round figures, when compared in size to man, is truly incredulous. Even the alleged strength of the once mighty Samson would fade into insignificance, when compared to the strength of the ants.

"In some unique experiments with the ants, it was ascertained that they could actually hold up, lift clear off the ground, objects a thousand times their own weight. A man weighing, say, one hundred and fifty pounds would have to lift up seventy-five tons to duplicate that feat.

"For the first time since the accident I was on my feet, learning to walk again, walk by mechanical proxy. It was complete from the top of its head, covered with a thick thatch of fine wire, in lieu of hair, to the soles of its feet, which were composed of a number of short tempered springs molded into a rubber-like substance of conventional shape, but oversize, to support its great weight.

Resolutely I stuck to it. During those first few weeks I practiced each limb separately. After a few more weeks of constant practice, its movements, at first jerky, became more natural, life-like. Morning, noon and night saw me practicing such simple movements as standing up, sitting down, walking, running, jumping, waving its arms and using its hands. Just as a typist gains control over her machine, so was I, the will,

gradually and steadily gaining control over it, the body.

"Sitting in my chair before a ground glass screen, the receiving end of my radio television apparatus, a pair of earphones clamped over my ears, a microphone a few inches from my mouth, with my hands operating the more perfect body of my proxy, I could do the impossible, being in two places at once.

"It took me in the neighborhood of three months before my proxy could move naturally enough to please me. Up to last evening, I kept it always within the bounds of my farm. I had no opportunity to test it to its full capabilities as yet, though I did make my proxy as rugged and strong as possible, far too strong for this planet of its birth in fact. It seemed like a being from some larger and crueller world than ours. Often did I make it leap thirty or forty feet straight up without an effort, retaining its balance through the agency of a whirling gyroscope situated in its chest, while its rather pot-belly housed one of the most powerful electric motors capable of being built. I solved the problem of wireless transmission of energy, and the motor received its power from a 'wireless transmission of energy transmitter' that had, up to a recent period, occupied the third floor of the laboratory that was destroyed last night."

* * *

THERE had been reports of several hold-ups in the vicinity. A figure of average height was slowly sauntering down the country lane just outside of the city limits. He was holding himself stiffly erect. Broad he was, much broader than the usual run of men. Although his broad shoulders hinted of immense strength, his paunch, standing out boldly, told plainly of his lack of condition.

There really was nothing so remarkable about him, except that his step, as light as a cat's, was not in keeping with his great bulk. He carried himself along without any apparent effort, swinging his body easily with each stride, as smooth in his progress as a tiger or a car on a city boulevard.

His features could not be seen because the brim of his soft felt hat was turned down rather low in front. He was wearing an ill-fitting suit, seemingly of the home-made variety, bulging everywhere, with about as much style in its cut as a potato sack. Any closer details of his person could not be made out.

Humming a low tune to himself, turning his head neither to the right nor left, he kept strolling easily along. One felt instinctively that here was a man of tremendous physical possibilities. Perhaps he had been a great athlete in his day, who was now on the downward grade. Whoever and whatever he actually was, there could be no doubt but that in a pinch, he would prove master of any physical situation—a man of iron.

Why did he choose this road to stroll on? It was obvious that he was not familiar with it. Was it because of the recent hold-up reports? Did he hope to avoid the bandits by taking a roundabout way to his home? It was hard to imagine him fearing anything that lived or breathed.

Another figure at the side of the shrouded outlines of a car was watching him intently, discussing him in

jerky monosyllables with a companion at the wheel. The man at the wheel, a timid sort with the soul of a rabbit, but who could, on occasion, drive like the devil, with the devil's own luck, took only one good look at the vague outlines of their unsuspecting victim, who was so confidently approaching them, then sank down on his seat and tried to persuade his companion to get in and beat it while the beating was still good.

But the other, plainly a human weasel, a wanton killer, sneered something about only a d—rube, and said that he'd take a chance any time. He produced a metallic object from a holster under his armpit, and, keeping well in the shadow of a hedge that ran alongside of the road, stole forward about twenty paces and waited.

"Stick-'em-up," came a command in a cold, business-like tone from against the hedge on the side of the road. "Up with them, up higher!"

Still humming, the other lazily complied. He stopped humming and chuckled, as though the joke were on the other, and turned his head slightly to get a better view.

"If you make another move, you big bum, I'll fill you so full of lead that you'll weigh a ton!" the brave and noble highwayman behind the automatic barked.

The bandit took about a half a step toward his intended victim—then it all began to happen at once. Why he started shooting, is hard to say. Perhaps it was the subtle menace of the other's careless attitude? From the bandit's automatic there leaped a steady sheet of flame, and the stillness of the night was rent by crackling reports coming so closely on the heels of each other that they seemed to blend into one prolonged crash.

A cry broke forth from the victim, seemingly endless, a low-pitched scream, that rose rapidly through every known octave, higher and higher and still more shrill like a siren. It acted just as a rasp would on the raw nerves. Then it began to fade, not out, but up, vibrating at a pitch so high that human ear could not hear it. And though it could not be heard, it could be felt; it set the nerves a-teetering.

The bandit felt himself fast succumbing to its fear-instilling influence. He knew, also, that his knees were trying to vibrate a close second to the soundless scream of his victim. Then his knees began to give way beneath him and, as he got a closer look at his intended victim's face as he half collapsed, he let out a shriek that almost equalled the other's. He turned and ran, crying out desperately to his mate that it was the devil himself whom he had tried to hold up. Somehow he had held on to his now useless gun, perhaps as a drowning man holds on to a straw.

His companion in crime, realizing that all was not well, began to get the car under way, waiting nervously for the other to catch up. The fleeing bandit heard steps close behind him. And knowing that his pursuer would get him in another half a dozen strides if he did not do something, he turned and threw the automatic full in his pursuer's face.

A hand shot out and caught it. There was a snap of breaking steel and—whizz—over his head and through the car's windshield, now two or three hundred feet or

so away, flew the fragments of the gun with the velocity of a bullet, missing the driver by a fraction of an inch.

The erstwhile bold bandit heard a still swifter pat of rubber-soled feet behind. His body literally quivered for the expected touch. He faltered in his stride and the next instant felt himself picked up by the seat of his trousers and carried along. This was too much for his overwrought nerves; he promptly fainted. His intended victim, without any apparent slackening of speed, though he must have received the full force of a half a dozen bullets at close range, leaped in pursuit of the other at the wheel.

He might as well have leaped in pursuit of the wind. There was a roar and then a screech, after which the tail-light was seen disappearing down the road, swerving from side to side in the most alarming manner. Fear had lent courage to the man at the wheel. He was certainly tempting fate at that speed.

Still carrying the unconscious bandit, who had revived and immediately fainted again, by the seat of his trousers, the man with the great paunch and broad shoulders was giving an unearthly exhibition of speed. He was traveling away from the city whose lights faintly illuminated the sky behind him. Most of the time he ran as an ordinary man would, but sometimes he broke his stride and took to leaping, kangaroo fashion, covering the ground in great leaps of thirty to forty feet each.

A poster, dimly seen in the gloom, claimed his attention. He paused. Although in the light of day it might have stood forth as an extravagantly colored picture, it was now nothing but a square blot in the gloom. But he did not seem to experience any difficulty in seeing its various colors and reading it. It was a circus poster advertising to-night's performance—a great lion charging an intrepid white hunter, while a score of natives were fleeing in every direction. It flaunted the heading: "Caesar, the Untamed and Untameable Monarch of the Jungle."

Just as any kid would stare at a circus poster, so stared he at it. He turned completely around and headed back in the direction of the city. Seeing a haystack near the side of the road, he thought of a way by which he could rid himself of his useless burden. He leaped near it, going high in the air, and threw the unconscious bandit into it as easily as one would sling a stick.

THERE was a roar that mounted above the general circus noises. It was pregnant with unlimited possibilities. An uncanny silence followed. Sharp commands and cries broke out here and there. Somehow "Caesar, the Untamed and Untameable Monarch of the Jungle" had broken loose.

There he stood at the entrance of a tent, plainly bewildered. He was sleek and powerful, a giant of his kind. The lion was growing nervous, growling, his tail lashing from side to side. He had never tasted liberty, being born in captivity and therefore he was doubly dangerous.

The lion let out another roar as he charged a knot of men and women that stood in his way to liberty. Pan-

demonium broke loose. Women shrieked and fainted, men turned ghastly pale as they tried to run. Others, on the outskirts of the throng, fled helter-skelter.

A sound came from the opposite direction, instantly halting those that fled that way. It started as a low-pitched scream, then rose and rose. It was terrible. No known living creature could have produced it. The blood seemed to chill and curdle in the veins of those who heard. Even the lion's initial roar sounded tame in comparison. The lion checked a leap, that would certainly have landed him pell-mell among a group of men and women nearby.

It startled even this splendid creature for a moment. He was young, had had a taste of freedom, and he was in no submissive mood. His subsequent actions went to prove that he well deserved his title as king of beasts. While all else within the vicinity of the circus grew deathly still, the lion raised his magnificent head and roared back his challenge.

Born in captivity, the noises of man and his mechanical aids were familiar to him. What was an unknown and nerve-jarring scream more or less?

Then another scream, more terrible than the first, launched itself upon the night. All eyes turned toward the direction of its source. Fearfully the eyes of men and beast searched in that direction. What was this new terror?

A man of average height, but of enormous girth, stepped confidently within the glare of the lights. He moved silently and swiftly toward the lion.

It was only a mere man. He carried no weapons. He must be either crazy or a fool of the supreme sort to attempt to tackle the lion with bare hands.

The lion, sensing a worthy antagonist, charged with a roar. They met, yet they did not meet, in a space that luckily happened to be clear of milling humanity. The man avoided the lion's lightning sweep of claws by leaping nimbly aside. The lion turned, growling terribly, while the man laughed mirthlessly.

Why did not the pleasure-seeking crowd about the man and beast flee, now that they had a chance? Did the dramatic spectacle of the king of beasts and an unarmed man coming to grips hold them rooted there spellbound? Was the attraction greater than the fear of death? In perfect unison they gasped with relief as the man eluded the lion's raking claws again.

The lion sprang, swerved in midleap and struck the man a swift glancing blow on the chest, ripping the man's coat clear off his shoulders. It was incredible that the blow did not kill him—it would have killed a horse. Swift as a cat the lion turned and reared up on its hind quarters and struck again and again and again. Every shred of the man's clothing was ripped off except his hat, which seemed to be either wedged or glued on.

The man half pushed, half struck his assailant off and leaped back. In the glare of the circus lights he stood naked, destitute of clothing in the shape of cloth. Yet he was not exactly naked, he still had on a form-fitting suit of blue tinted chain mail. Where the lion's claws had raked, the mail gleamed like polished steel.

As the man leaped away, the lion charged yet again.

Then the man turned aggressor, sprang in and cuffed the lion on one side of the head and then on the other. The man moved with lightning speed. The lion snapped at the hand and missed. The lion leaped at his tormentor; the man moved forward and struck the beast a mighty blow, a crack like a stick breaking could be heard, and the beast spun half way around. The lion retreated with the man following. The lion turned, growling viciously, reared up on his hind quarters, and waited.

With his head down, imitating a battering ram, the man leaped within that deadly embrace. The shock threw the lion on its back with the man astride on top. The lion gripped with his forepaws, arched his back in the form of a bow and raked downward. The claws did not and could not penetrate the chain-mail.

Except for the low growls issuing from the lion's slavering jaws, and the strange creaking coming from the man, there was no other sound to mark the desperateness of the struggle.

The man tore himself loose and cuffed the lion with the right hand and then with the left. The lion's forepaw flected out and left a silvery streak across the man's mail-covered chest. The man struck again and again, moving forward, while the beast gave back grudgingly.

Was Caesar, the unconquered and unconquerable, meeting his master at last? It seemed so. Something in the man's attitude suggested a cat playing with a mouse, only the lion in this case was the mouse.

TIRING of his sport, the man stepped back; his body sank down, then he leaped. Up, up, ten, twenty, thirty, forty feet, and came down straight for the lion's back. The lion, following his flight with his eyes, swerved sharply aside and started to bound away. The man rebounded from the ground and vaulted upon the lion's back. He crossed his feet under his belly and held. The lion sank to the ground under the weight of the man.

One hand shot over the lion's head and gripped the upper jaw; the other hand came up from below and caught the lower jaw and began to pull. The beast whimpered. Desperately he made one last hopeless attempt to stand erect—and failed. He sensed the end.

The hands that gripped the slavering jaws began to move mercilessly apart. With superhuman strength the man gave a sudden jerk to the upper jaw, breaking the brute's neck.

A series of long drawn out ejaculations broke forth from the crowd, which had unconsciously crept forward during the struggle—so engrossed had they been in it.

The man stood up. His hat had come off during the latter part of the conflict. The spectators who had ringed the two, fell back suddenly. Those on the outskirts of the circle turned and fled. Those nearest the man, they who could not push back, either crossed themselves or began praying aloud. All, with their bodies literally quivering in terror, began to melt away.

The man who had so easily vanquished the king of beasts was even more terrifying than the lion in all of

his fury. He was not a man—not a human being!

Yet he did not differ much from the usual run of mankind. The outline of his form showing through the chain-mail was that of a Hercules. From his square-cut jaw to his cheekbones his features did not differ much from any determined individual, all resemblance to man ceased there. Over the cheekbones, the head bulged sharply out. The forehead was massive, broad and high. It was the eyes that struck terror. They were not the eyes of any known warm-blooded creature; rather they resembled the simple compound eyes of the insect world. They were as large as baseballs, glittering with a subdued light all their own. Faced with thousands of facets, they looked for all the world like two huge diamonds set there.

The being stooped, swung the lion's carcass easily upon his broad shoulders, leaped over a line of cars parked beside the road and disappeared in the darkness. Far down the road it let out an awful scream which rose and rose through every known octave, then faded up.

From the instant that the lion had let out its first roar until the strange being disappeared down the road could not have covered more than a minute and a half—it had all been done so quickly. Those who heard and witnessed the struggle could hardly believe their senses; it was so much like a nightmare.

Coming to a broad stretch of fresh water, this being with the carcass of the lion still upon his shoulders, plunged into it without the slightest hesitation.

On the sloping beach of the southern shore about an hour later a thing which seemed to belong to the realms of sleep or to the horrors of the tomb crawled out of the water. It was covered with the slime of the bottom and was oddly shaped. It bore a huge hump upon its shoulders that later resolved itself into the carcass of a separate beast. The thing shook the water off itself and its burden.

Overhead a full moon gazed down on the antics of this thing complacently. The stars winked at it. There was a strange kinship between it and those far-off stars.

This being ran along the wet, hard-packed sand, leaping over obstacles with ridiculous ease. About twenty minutes of running brought it to a road, down which it sped.

A little rusty, mud-bespattered car, rattling loudly enough to awaken the dead, was moving slowly down the road. Some milk cans reposed on the seat beside the driver and in the tonneau. The driver, presumably a farmer, kept glancing uneasily back. Something was following him. Barely seen in the driver's mirror, were two glowing spots, gleaming like the headlights of a far-off car.

The driver of that tin can of a car stepped on the gas. Still the twin spots of light kept the same distance away. The driver, with his foot, moved some levers which caused all the rattling to gradually fade away. Then he stepped on the gas again and watched the needle move up to sixty.

But the two spots of light only gleamed brighter in the mirror. There was a thud of some heavy body

being thrown in the back of the car amongst the milk-cans. An odor of a liquid that was supposed to have been forbidden, arose from those same milk-cans, tickling the driver's nostrils with an alcoholic aroma. Then he felt the speed of the car perceptibly slacken. Though the motor was roaring and the wheels were screeching on the road, the car came to a full stop. The rear end of the car was being lifted off the ground. Now it was at an acute angle.

The driver, shivering as if with ague, shut off the motor and got out of his car to investigate. Catching but a glimpse of what lay sprawled among the milk-cans, he turned and ran shrieking:

"I've got them again! I've got them again!"

With his hands over his eyes, he ran blindly down the road, crying the same words out continually.

Fortunately for him, he did not glimpse the unknown thing behind the car, for this being was employed in gripping and raising the little car with its freight of milk-cans filled with the prohibited liquid. After he had lifted the car above his head at full arm's length, he ran a little way with it and threw it into a sturdy tree that grew alongside of the road. There was a snapping of branches and the car lodged securely just above the trunk. This strange being then turned and, forsaking the road, sped back in the direction whence he had come, with an unbelievable exhibition of speed, hurtling squat farm houses, trees, and every obstruction that appeared in his path.

About two hours after midnight this selfsame being came into view near a three-storied brick building standing on a low hill. High in the west, through a rift in the clouds, the moon shone forth suddenly. He gazed at it for a moment, and stretched forth his arms as if to grasp it. He turned reluctantly and moved toward a doorway a few paces away. The door was locked with a large padlock and was solidly built. Placing the flat of his hand against the door, he pressed lightly and tore the door from its hinges. The being turned for a moment, waved his hand as if he were waving farewell, and stepped within.

A few minutes later there was a roar which shook the ground for miles around. Out of the top of the three-storied building a projectile flashed. From the base of the projectile there shot sheet after sheet of flame. The reports split the countryside with their reverberating crashes. *Was this being going home?*

* * *

"AND so last night, Mat, I tested my proxy to see what it really could do before I let him go on the mission for which he had been built. He is now headed for the moon on an interstellar projectile employing the rocket principle. I had to send the ship almost wholly around the earth in our planet's rarefied upper atmosphere before it attained the speed of seven miles a second. Once past the earth's gravitational pull, the projectile, coming within the attraction of the moon, will automatically reverse itself and fall toward our satellite with ever increasing speed. I will use the rocket discharges to slacken its terrific velocity and to ease it down gently on the lunar surface."

"How long will it take the projectile to travel the

distance between the earth and the moon?" I asked quietly, subdued by the magnitude of the task he had accomplished.

"Sixteen hours at the utmost. By six o'clock this evening it will be resting upon the surface of the moon."

I pulled out my watch and glanced at it.

"What time have you got now, Mat?"

"About a quarter to ten."

Emil glanced up at the complicated apparatus before him.

"You are four minutes slow," he said.

I set my watch and looked closely at the complex apparatus before which Emil sat. An oblong metal box with a front of ground glass, about a foot square I judged the ground-glass screen to be, occupied the central position. Three rows of keys, they resembled the keys of a typewriter in arrangement, were directly in front of the ground glass screen. Levers and knobs flanked the keys on either side. Above the oblong box was a row of various dials whose pointers now were all at zero.

Emil picked up a pair of earphones and toyed with them.

"You will have to excuse me for a while, Mat," he said. "I have to give my undivided attention to the projectile until I have landed it safely upon the surface of the moon."

He placed the earphones over his ears and moved a number of levers. The pointers in the row of dials above the oblong box began to move. His fingers hovered over the keys.

"Mat," he called out, "do you mind closing the shutters and pulling the draperies across the windows so as to exclude all the light?"

I did so and the room was plunged into pitch darkness. A glow from the ground-glass screen guided me back to where Emil sat. Starting at the screen, I made out some misty lines coming to focus. The mistiness cleared and I seemed to be gazing into a mighty engine room. A battery of some sort of combustion engines supplied the power, while all about dynamos and machinery were whirling evenly. Down the center stretched a narrow railed-off passageway. A switchboard with a number of pilot lights and large black-handled switches was at the end of the passageway. A few inches above the switchboard was the eye-piece of a telescope. The walls, circular in form, were composed of very heavy metal plates riveted together.

The switchboard suddenly started drawing nearer. A hand moving along the railing came into view for an instant. The eye-piece of the telescope grew large, covered the whole ground-glass screen, and I was looking at the moon. It seemed to be very near, very jagged. For about a half hour I stared at it and then grew restless. It did not seem to be growing any larger. Then I recalled that the vehicle would not land until six o'clock this evening. I did not relish the thought of watching the moon for seven or eight hours. I touched Emil's shoulder to attract his attention.

"Emil, I am going out to say 'howdy' to the neighbors. I will be back before six."

I tiptoed out, closing the door softly behind me.

About five-thirty I was back. Emil was still hunched over the ground-glass screen with his fingers playing over the keyboard that controlled the movements of his proxy.

"Is that you, Mat?"

"Yes."

"You came just a few minutes too late to see me land the projectile on the moon. It landed with but a slight jar in one of the moon's ringed-plains. My proxy stepped out of the projectile only a moment ago and is now standing on what looks like a smooth plain through some of the largest telescopes on earth. Come here and see what the surface of this plain actually looks like."

I hurried over and stared at the ground-glass screen. It showed a scene of awe-inspiring bleakness. The plain was rough with a sharp jaggedness such as one never sees on earth. An unbroken wall of mountains surrounded the plain. The proxy turned its head and the projectile that carried him came into view. It looked like a beached submarine minus its conning-tower. Four heavy funnel-like tubes protruded from one end.

"I am going to send my proxy on a trip of investigation," Emil said, breaking the stillness of the room. "I will have to be careful. Owing to the fact that gravity is one-sixth that of earth, my proxy will be able to travel six times as fast, leap six times as far and high. I will make it leap straight up now to take my bearings."

THE ground suddenly dropped away. It showed a plain over which it was possible to travel only by great leaps such as this mechanical proxy of Emil's alone was capable of through the lessened force of gravity. In the distance there were a number of wide cracks. Above the mountains the heavens showed black, the stars shining brilliantly. The proxy turned in its upward leap and for an instant the ground-glass screen was flooded with a blinding blaze of light—the sun as seen through the eyes of the proxy.

The surface came up as the proxy dropped, then the ground began to fly past with terrific speed. With the sure-footedness of a cat the proxy leaped from rock to rock. The surface of the plain became more rough and jagged as he drew nearer the mountains. Suddenly the fissure which had been seen in the upward leap came into view. The speed slackened and the fissure was approached cautiously. The eyes peered over the edge. It seemed bottomless. Far below something like white steam curdled. The walls fell straight away. The crack was miles deep at least and ran across the plain from mountain to mountain. At its greatest width it could not have been more than one hundred feet wide. Stepping back for firmer footing, the proxy leaped across it with ease.

Farther on another fissure appeared, wider, one that could not be crossed by a single leap. Again the proxy crept to the edge and peered over. The walls of this crack in the lunar surface sloped to the center and were jagged like nearly all the rest of the moon's surface. It was not very deep, more closely resembling a valley

than a fissure. Near the bottom of the opposite side, a large roughly circular black hole yawned.

The proxy eased itself over the edge and started to descend in the direction of the cavern mouth. Reaching the opening, it peered within. Nothing could be seen but blackness. The proxy did something to its chest and a bright light shone forth, illuminating a circle of the wall on the opposite side of the cavern. The circle of light moved along the wall until it came to a small opening half-blocked by a mass of rock that had in some past age dropped from the roof of the cavern.

The proxy moved over to the opening and squeezed in. The light showed a narrow cave, the floor of which sloped downward. With the light showing the way, the proxy followed it. The cave twisted and turned, widened so that a half dozen cars could have driven through it abreast; other caves branched from it; always it led down. It seemed that the proxy had been following it for hours. The walls glistened as though they were wet. A mistiness filled the cave, grew thicker as the cave widened into an immense cavern.

There was some sort of gaseous atmosphere within the cavern, an atmosphere that was dense enough to support a heavy whitish vapor that whirled overhead. The cavern narrowed and the floor sloped down at yet a steeper angle. On the glistening walls that were sweating a colorless liquid, globules began to form and

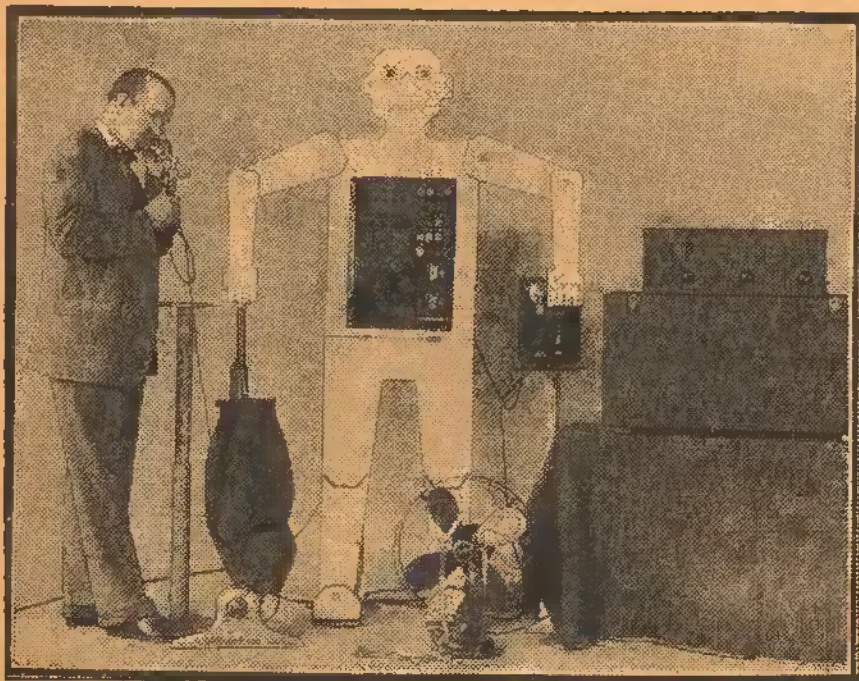
run down to the wet and slippery floor. The atmosphere grew noticeably thicker and more moisture laden. A small stream began to form on the sloping floor—at first a trickle, then a swift moving streamlet which grew into a rushing, foam-covered stream. It swirled and splashed against the proxy's legs. Fed by similar streams from other caves, which were continually opening up into this main downward passage, it became a roaring torrent, against which the proxy had difficulty in keeping its footing.

The cave widened again and the water spread out. Knob-like protuberances, faintly luminous of their own accord, began to dot the glistening walls in ever increasing numbers. They were of every size and, as the proxy turned out the light on its chest, the walls and rushing torrent could be made out by their glow.

The proxy had already descended miles into the moon's interior. The rushing torrent had worn a deep channel in the cavern floor and the proxy was following it along its edge. The cavern opened into an immense hollow. A thousand and one openings branched from it. The walls and roof were covered with luminous protuberances, mushroom-like growths, by whose light every crack and crevasse in floor and wall could be distinguished.

Suddenly a luminous object darted by above the proxy's head. It circled and flashed within a few feet of the proxy's compound eyes. Another of those

"TELEVOX" THE MECHANICAL MAN



This is a photograph of the actual mechanical man, or "Televox," as it is called, as produced by Westinghouse, showing various household appliances attached, ready for use.

If you believe that the accompanying story is too fantastic, may we call your attention to the fact that a great deal of scientific work has already been accomplished along similar lines? Recently, the Westinghouse Electrical Manufacturing Company put out a mechanical man called the "Televox."

This machine is placed in your own home, and connected to it there is a vacuum cleaner, electric fan, and a number of other household appliances.

This mechanical man is operated entirely at a distance, and is attached to your home telephone. You call up your home 'phone and by means of whistle blasts, you can make the Televox do almost anything, from starting the carpet sweeper to starting and stopping the fan, opening or closing the windows, operating the ice cream freezer and performing other useful work, although you may be a thousand miles away from him. Not only that, but the mechanical man has also a voice; he can answer the telephone and he will say, if necessary, "Televox speaking at Randolph 6400." This he will repeat a second time, and if you do not give him the proper signal by means of whistles or other musical devices, the Televox will then hang up the receiver, upon the assumption that the call

was the wrong number called. Many interesting uses have already been found for the mechanical man.

luminous objects joined the first and circled the plodding mechanical figure. They sped away after a few minutes of continuous circling.

They were the first form of animated life seen so far. The huge cavern seemed to be the topmost level at which life could exist within the moon's interior. Other forms, the opposite extreme, worm-like and luminous, resembling glowworms of earth, could be seen crawling along the walls to the glowing knob-like protuberances. A black object, about as high as an elephant and twice as long, confronted the proxy for an instant as it appeared in a large black opening, turned and made lumberingly off. It had numerous feet, like that of a centipede. From a side cavern, a number of other strange creatures rushed forth, passing within but a few feet of the proxy. Behind them came one of those huge lumbering beasts of many feet with an indistinct and grotesque creature squatting on its back. They passed out of sight down another opening.

The proxy followed them. The opening led into a yet larger cavern. The walls were cliff-like in proportion, the roof was lost in the mistiness above. A number of black openings could be seen high up in the cavern wall. The creatures that had entered this huge cavern were nowhere to be seen, having fled through its innumerable exits.

The proxy was plodding along steadily near the wall of the cavern when something struck the floor a few

feet ahead, shattering into hundreds of pieces. It was a mass of rock that had fallen, the largest of the scattered fragments being about a foot in diameter. Another massive rock struck the cavern floor a little to one side and then another. Looking up, the proxy saw a ledge high up in the wall and upon it a number of creatures engaged in pushing over another stone. It fell, coming straight for the proxy's head. The proxy tried to swerve, the rock, larger than another piece that had been pushed over the ledge, was only a few feet away. Suddenly there was darkness, the ground glass screen was black.

I heard Emil's fingers thumping the keys. The screen did not show even the faintest trace of light.

"Mat," Emil cried, "the large lump of rock that those creatures had pushed over struck my proxy square on the head and smashed it."

I reached up and turned on an electric light above Emil's head. Emil was staring blankly at the square glass screen. I placed my hand upon his shoulder.

"Buck up, Emil," I murmured. "You can build another one."

"Leave me, Mat," he whispered.

I looked at him for a moment pityingly as he sat slumped over the keyboard that had controlled the proxy. As my fingers closed on the doorknob, I heard him berate himself for not putting the controlling apparatus in a less vulnerable place than the head.

THE END.

The Menace

By DAVID H. KELLER, M.D.

OUR well-known author, who has endeared himself to the hearts of AMAZING STORIES readers, has written a series of unique stories for the QUARTERLY. The four stories may be read separately, or in a series. It would be useless to attempt to review them in a preface of this kind. The only thing we can say is that these four stories are chock full of interest, and contain an excellent amount of science, very cleverly interwoven.

A great many new ideas are brought out in these four stories. Although all the four stories are definitely connected, each treats of an entirely different theme and can stand alone.

While a prominent detective assumes an important role throughout this series, they cannot be called detective stories in the usual sense of the word.

We promise you a lively time with these stories. They will not fail to keep your interest, and you will follow the adventures of the arch villains breathlessly until the end.

This story is published in the Summer Edition of
AMAZING STORIES QUARTERLY
now on sale at all newsstands

Out of the Sub-Universe

By R. F. STARZL

EVERYTHING in this world is relative, with or without Einstein. Even time is relative.

As Benjamin Franklin pointed out, the Ephemeric fly lives only twenty-four hours; yet leads a normal existence. During those twenty-four hours, it lives a full-time life, which, to the fly is of the same duration as a 60 to 70 year old life led by the human being. So too, is it with a microbe or microbe organism, which lives only a few minutes and then dies. These few minutes constitute a normal cycle. It simply lives much more quickly, although it does not realize it.

You can conversely imagine a race of human super-beings on some other planet, which normally would live perhaps 10,000 years, as computed according to our time. To them a few years of allotted life would be incomprehensible.

Here is a charming story which contains excellent science and will teach you a great deal about the atomic world, if you do not know it already. Also, it contains that most elusive jewel—the surprise ending.

This story is published in the Summer Edition of
AMAZING STORIES QUARTERLY
now on sale at all newsstands

The SKYLARK of SPACE

By Edward Elmer Smith

In Collaboration with Lee Hawkins Garby

What Went Before:

DURING an experiment for the Government Bureau of Chemistry, in which Richard Seaton, a clever chemist, had been electrolyzing his solution of "X," an unknown metal, he accidentally discovers the enormous power of this solution when acted on by an electric current.

A demonstration in the government laboratories the following day proved unsuccessful on account of a flaw in the electrical connection, so Seaton leaves the government employ and takes his solution with him for some personal experiments.

Mr. Reynolds Crane, Seaton's millionaire friend, becomes interested, and they decide, together, to build first a space-flier to be propelled by this intra-atomic energy, and later a power plant to supply the world with all its necessary power.

Mr. Marc DuQuesne, a fellow chemist in the government employ, is certain that the unsuccessful demonstration was "faked," when he learns that Crane is helping Seaton. He goes to Brookings, head of the Steel Trust, with whom he had had nefarious dealings and offers to help get and utilize the solution. He asks an enormous sum in return. Brookings refuses DuQuesne's offer and gets some of the solution of "X" for himself. Their own chemist is sent to an isolated spot to experiment with a few drops of the solution, and very shortly after that the world hears of a mysterious explosion, that takes with it the chemist and a considerable amount of the surrounding ground and property.

When Seaton and Crane learn of the explosion, they conclude that someone, somehow, had gotten hold of some "X," and a test of the contents of their vial which contained it proves that they were right. They suspect DuQuesne because he is the only chemist who might know anything about the solution, and who would dare to experiment with it, but they cannot "get" him. Following DuQuesne with a special compass which Seaton had invented, they learn that Brookings is involved. They can do nothing, however, but become extra cautious and wary. After their unsuccessful experiment, Brookings is will-

ing to give DuQuesne anything. They are able to steal some plans for the space-car and a small vial of diluted solution.

In building the space-flier for Seaton and Crane, the Steel Trust under Brookings machinations uses faulty material, certain that it will not be noticed, until the car is in interstellar space. Seaton and Crane discover the faulty material early in the building and secretly have another ship built much larger and better equipped, which they name "Skylark." At the same time the Steel Trust is having a space-flier built for itself from the stolen plans.

Margaret Spencer, Brookings' secretary, has obtained some damaging evidence against the Steel Trust, particularly in relation to some inventions originated by her father, which that company swindled him out of.

Perkins, a super-criminal detective, in the employ of the Steel Trust, and DuQuesne, abduct Margaret Spencer in their space-car in the hope of scoring her into giving up the evidence on another planet. They also abduct Dorothy Vaneman, daughter of a prominent lawyer and Seaton's sweetheart, in the hope that Seaton and Crane will follow in his faulty space-flier and be destroyed, or that they will willingly give up their plans and the solution in return for Dorothy Vaneman. The Steel Trust's space-flier is lost millions of miles from the earth and is in danger of being drawn into another planet, when the Skylark locates them and because of its greater gravity-resisting powers, rescues all but Perkins, who recently had been killed in the flier. In the Skylark, the reunited crew travel in search for more copper and after various thrilling adventures that once nearly proved their finish, land on Osnome, a planet inhabited by intelligent beings, and rich in many metals rare on earth. Nalboon, the emperor of Mardonale, in return for being saved by them from a ferocious unconquerable animal, takes the Skylark crew to his palace for a sumptuous meal, giving them a dozen captured men and women from Kondal, another nation on Osnome, as their slaves.

Part III

CHAPTER XIV.

Nalboon Unmasked



AFTER a long, sound sleep, Seaton awoke and sprang out of bed. No sooner had he started to shave, however, than one of the slaves touched his arm, motioning him into a reclining chair and showing him a

keen blade, long and slightly curved. Seaton lay down and the slave shaved him with a rapidity and smoothness he had never before experienced, so wonderfully sharp was the peculiar razor. After Seaton had dressed, the barber started to shave the chief slave, without any preliminary treatment save rubbing his face with a perfumed oil.

"Hold on a minute," interjected Seaton, who was watching the process with

interest, "here's something that helps a lot." He lathered the face with his brush and the man looked up in surprised pleasure as his stiff beard was swept away without a sound.

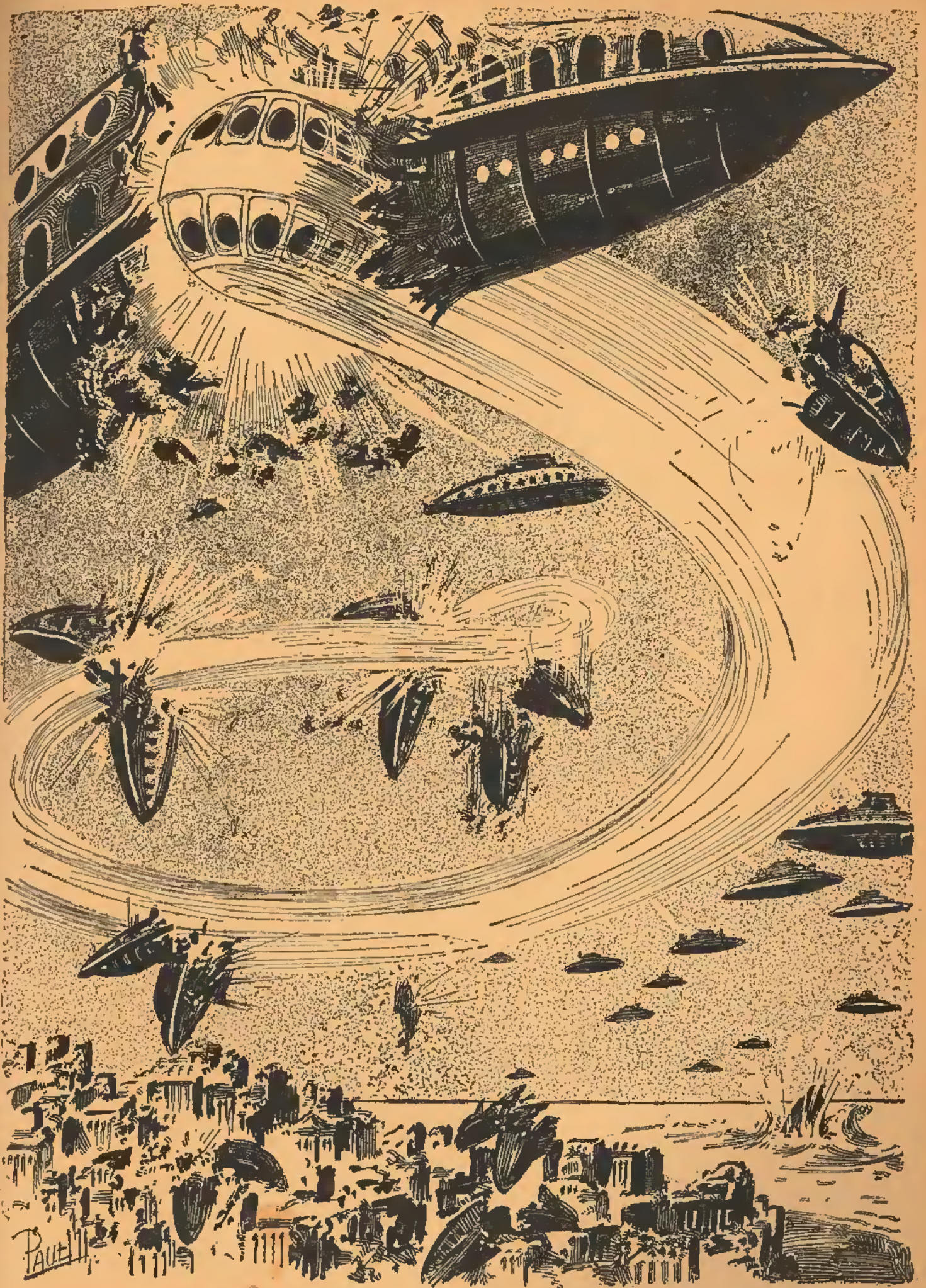
Seaton called to the others and soon the party was assembled in his room, all dressed very lightly, because of the unrelieved and unvarying heat, which was

constant at one hundred degrees. A gong sounded, and one of the slaves opened the door, ushering in a party of servants bearing a table, ready set. During the meal, Seaton was greatly surprised at hearing Dorothy carrying on a halting conversation, with one of the women standing behind her.

"I knew that you were a language shark, Dottie, with five or six different ones to your credit, but I

BY the time you finish reading the final instalment of "The Skylark of Space," we are certain that you will agree with us that it is one of the outstanding scientific stories of the decade; an interplanetary story that will not be eclipsed soon. It will be referred to by all scientific fans for years to come. It will be read and reread. This is not a mere prophecy of ours, because we have been deluged with letters since we began publishing this story.

In the closing chapters, you will follow the adventures with bated breath, and you will find that though the two preceding instalments were hair-raising and thought absorbing, the final instalment eclipses the others a good deal. Plots, counterplots, hair-raising and hair-breadth escapes, mixed with love, adventure and good science seem to fairly tumble all over the pages. By the time you finish this instalment, you will wish to go back to the beginning of the story and read it more carefully and thrill all over again.



The Skylark darted forward and crashed completely through the great airship. . . . She was an embodied thunderbolt; a huge, irresistible, indestructible projectile, directed by a keen brain inside. . . .

didn't suppose you could learn to talk this stuff in one day."

"I can't," she replied, "but I've picked up a few words of it. I can understand very little of what they are trying to tell me."

The woman spoke rapidly to the man standing behind Seaton, and as soon as the table had been carried away, he asked permission to speak to Dorothy. Fairly running across to her, he made a slight obeisance and in eager tones poured forth such a stream of language that she held up her hand to silence him.

"Go slower, please," she said, and added a couple of words in his own tongue.

There ensued a strange dialogue, with many repetitions and much use of signs. She turned to Seaton, with a puzzled look.

"I can't make out all he says, Dick, but he wants you to take him into another room of the palace here, to get back something or other that they took from him when they captured him. He can't go alone—I think he says he will be killed if he goes anywhere without you. And he says that when you get there, you must be sure not to let the guards come inside."

"All right, let's go!" and Seaton motioned the man to precede him. As Seaton started for the door, Dorothy fell into step beside him.

"Better stay back, Dottie, I'll be back in a minute," he said at the door.

"I will not stay back. Wherever you go, I go," she replied in a voice inaudible to the others. "I simply will not stay away from you a single minute that I don't have to."

"All right, little girl," he replied in the same tone. "I don't want to be away from you, either, and I don't think that we're in any danger here."

Preceded by the chief slave and followed by half a dozen others, they went out into the hall. No opposition was made to their progress, but a full half-company of armed guards fell in around them as an escort, regarding Seaton with looks composed of equal parts of reverence and fear. The slave led the way rapidly to a room in a distant wing of the palace and opened the door. As Seaton stepped in, he saw that it was evidently an audience-chamber or court-room, and that it was now entirely empty. As the guard approached the door, Seaton waved them back. All retreated across the hall except the officer in charge, who refused to move. Seaton, the personification of offended dignity, first stared at the offender, who returned the stare, and stepped up to him insolently, then pushed him back roughly, forgetting that his strength, great upon Earth, would be gigantic upon this smaller world. The officer spun across the corridor, knocking down three of his men in his flight. Picking himself up, he drew his sword and rushed, while his men fled in panic to the extreme end of the corridor. Seaton did not wait for him, but in one bound leaped half-way across the intervening space to meet him. With the vastly superior agility of his earthly muscles he dodged the falling broadsword and drove his left fist full against the fellow's chin, with all the force of his mighty arm and all the momentum of his rapidly moving body behind

the blow. The crack of breaking bones was distinctly audible as the officer's head snapped back. The force of the blow lifted him high into the air, and after turning a complete somersault, he brought up with a crash against the opposite wall, dropping to the floor stone dead. As several of his men, braver than the others, lifted their peculiar rifles, Seaton drew and fired in one incredibly swift motion, the X-plosive bullet obliterating the entire group of men and demolishing that end of the palace.

IN the meantime the slave had taken several pieces of apparatus from a cabinet in the room and had placed them in his belt. Stopping only to observe for a few moments a small instrument which he clamped upon the head of the dead man, he rapidly led the way back to the room they had left and set to work upon the instrument he had constructed while the others had been asleep. He connected it, in an intricate system of wiring, with the pieces of apparatus he had just recovered.

"That's a complex job of wiring," said DuQuesne admiringly. "I've seen several intricate pieces of apparatus myself, but he has so many circuits there that I'm lost. It would take an hour to figure out the lines and connections alone."

Straightening abruptly, the slave clamped several electrodes upon his temples and motioned to Seaton and the others, speaking to Dorothy as he did so.

"He wants us to let him put those things on our heads," she translated. "Shall we let him, Dick?"

"Yes," he replied without hesitation. "I've got a real hunch that he's our friend, and I'm not sure of Nalboon. He doesn't act right."

"I think so, too," agreed the girl, and Crane added:

"I can't say that I relish the idea, but since I know that you are a good poker player, Dick, I am willing to follow your hunch. How about you, DuQuesne?"

"Not I," declared that worthy, emphatically. "Nobody wires me up to anything I can't understand, and that machine is too deep for me."

Margaret elected to follow Crane's example, and, impressed by the need for haste evident in the slave's bearing, the four walked up to the machine without further talk. The electrodes were clamped into place quickly and the slave pressed a lever. Instantly the four visitors felt that they had a complete understanding of the languages and customs of both Mardonale, the nation in which they now were, and of Kondal, to which nation the slaves belonged, the only two civilized nations upon Osnome. While the look of amazement at this method of receiving instruction was still upon their faces, the slave—or rather, as they now knew him, Dunark, the Kofedix or Crown Prince of the great nation of Kondal—began to disconnect the wires. He cut out the wires leading to the two girls and to Crane, and was reaching for Seaton's, when there was a blinding flash, a crackling sound, the heavy smoke of burning metal and insulation, and both Dunark and Seaton fell to the floor.

Before Crane could reach them, however, they were upon their feet and the stranger said in his own

tongue, now understood by every one but DuQuesne:

"This machine is a mechanical educator, a thing entirely new, in our world at least. Although I have been working on it for a long time, it is still in a very crude form. I did not like to use it in its present state of development, but it was necessary in order to warn you of what Nalboon is going to do to you, and to convince you that the best way of saving your lives would save our lives as well. The machine worked perfectly until something, I don't know what, went wrong. Instead of stopping, as it should have done, at teaching your party to speak our languages, it short-circuited us two completely, so that every convolution in each of our brains has been imprinted upon the brain of the other. It was the sudden formation of all the new convolutions that rendered us unconscious. I can only apologize for the break-down, and assure you that my intentions were of the best."

"You needn't apologize," returned Seaton. "That was a wonderful performance, and we're both gainers, anyway, aren't we? It has taken us all our lives to learn what little we know, and now we each have the benefit of two lifetimes, spent upon different worlds! I must admit, though, that I have a whole lot of knowledge that I don't know how to use."

"I am glad you take it that way," returned the other warmly, "for I am infinitely the better off for the exchange. The knowledge I imparted was nothing, compared to that which I received. But time presses—I must tell you our situation. I am, as you now know, the Kofedix of Kondal. The other thirteen are fedo and fediro, or, as you would say, princes and princesses of the same nation. We were captured by one of Nalboon's raiding parties while upon a hunting trip, being overcome by some new, stupefying gas, so that we could not kill ourselves. As you know, Kondal and Mardonale have been at war for over ten thousand karkamo—something more than six thousand years of your time. The war between us is one of utter extermination. Captives are never exchanged and only once during an ordinary lifetime does one ever escape. Our attendants were killed immediately. We were being taken to furnish sport for Nalboon's party by being fed to one of his captive kolono—animals something like your earthly devilfish—when the escort of battle-ships was overcome by those four karlono, the animals you saw, and one of them seized Nalboon's plane, in which we were prisoners. You killed the karlon, saving our lives as well as those of Nalboon and his party."

"**H**AVING saved his life, you and your party should be honored guests of the most honored kind, and I venture to say that you would be so regarded in any other nation of the universe. But Nalboon, the Domak—a title equivalent to your word 'Emperor' and our word 'Karfedix'—of Mardonale, is utterly without either honor or conscience, as are all Mardonalian. At first he was afraid of you, as were we all. We thought you visitors from a planet of our fifteenth sun, which is now at its nearest possible approach to us. After your display of super-

human power and ability, we expected instant annihilation. However, after seeing the Skylark as a machine, discovering that you are short of power, and finding that you are gentle instead of bloodthirsty by nature, Nalboon lost his fear of you and resolved to rob you of your vessel, with its wonderful secrets of power. Though we are so ignorant of chemistry that I cannot understand the thousandth part of what I just learned from you, we are a race of mechanics and have developed machines of many kinds to a high state of efficiency, including electrical machines of all kinds. In fact, electricity, generated by our great waterfalls, is our only power. No scientist upon Osnome has ever had an inkling that intra-atomic energy exists. Nalboon cannot understand the power, but he solved the means of liberating it at a glance—and that glance sealed your death-warrants. With the Skylark, he could conquer Kondal, and to assure the downfall of my nation he would do anything."

"Also, he or any other Osnomian scientist would go to any lengths whatever—would challenge the great First Cause itself—to secure even one of those little bottles of the chemical you call 'salt.' It is far and away the scarcest and most precious substance in the world. It is so rare that those bottles you produced at the table held more than the total amount previously known to exist upon Osnome. We have great abundance of all the heavy metals, but the lighter metals are rare. Sodium and chlorin are the rarest of all known elements. Its immense value is due, not to its rarity, but to the fact that it is an indispensable component of the controlling instruments of our wireless power stations and that it is used as a catalyst in the manufacture of our hardest metals."

"For these reasons, you understand why Nalboon does not intend to let you escape and why he intends that this kokam (our equivalent of a day) shall be your last. About the second or third kam (hour) of the sleeping period he intends to break into the Skylark, learn its control, and secure the salt you undoubtedly have in the vessel. Then my party and myself will be thrown to the kolon. You and your party will be killed and your bodies smelted to recover the salt that is in them. This is the warning I had to give you. Its urgency explains the use of my untried mechanical educator; the hope that my party could escape with yours, in your vessel, explains why you saw me, the Kofedix of Kondal, prostrate myself before that arch-fiend Nalboon."

"How do you, a captive prince of another nation, know these things?" asked Crane, doubtfully.

"I read Nalboon's ideas from the brain of that officer whom the Karfedix Seaton killed. He was a ladex of the guards—an officer of about the same rank as one of your colonels. He was high in Nalboon's favor, and he was to have been in charge of the work of breaking into the Skylark and killing us all. Let me caution you now; do not let any Mardonalian touch our hands with a wire, for if you do, your thoughts will be recorded and the secrets of the Skylark and your many other mysterious things, such as smoking, matches, and magic feats, will be secrets no longer."

"Thanks for the information," responded Seaton, "but I want to correct your title for me. I'm no Karfedix—merely a plain citizen."

"In one way I see that that is true," replied the Kofedix with a puzzled look. "I cannot understand your government at all—but the inventor of the Skylark must certainly rank as a Karfedix."

As he spoke, a smile of understanding passed over his face and he continued:

"I see. Your title is Doctor of Philosophy, which must mean that you are the Karfedix of Knowledge of the Earth."

"No, no. You're way off. I'm . . ."

"Certainly Seaton is the Karfedix of Knowledge," broke in DuQuesne. "Let it go at that, anyway, whatever it means. The thing to do now is to figure a way out of this."

"You chirped it then, Blackie. Dunark, you know this country better than we do; what do you suggest?"

"I suggest that you take my party into the Skylark and escape from Mardonale as soon as possible. I can pilot you to Kondalek, the capital city of our nation. There, I can assure you, you will be welcomed as you deserve. My father, the Karfedix, will treat you as a Karfedix should be treated. As far as I am concerned, nothing I can ever do will lighten the burden of my indebtedness to you, but I promise you all the copper you want, and anything else you may desire that is within the power of man to give you."

SEATON thought deeply a moment, then shook Dunark's hand vigorously.

"That suits me, Kofedix," he said warmly. "I thought from the first that you were our friend. Shall we make for the Skylark right now, or wait a while?"

"We had better wait until after the second meal," the prince replied. "We have no armor, and no way of making any. We would be helpless against the bullets of any except a group small enough so that you could kill them all before they could fire. The kam after the second meal is devoted to strolling about the grounds, so that our visiting the Skylark would look perfectly natural. As the guard is very lax at that time, it is the best time for the attempt."

"But how about my killing his company of guards and blowing up one wing of his palace? Won't he have something to say about that?"

"I don't know," replied the Kofedix doubtfully. "It depends upon whether his fear of you or his anger is the greater. He should pay his call of state here in your apartment in a short time, as it is the inviolable rule of Osnome, that any visitor shall receive a call of state from one of his own rank before leaving his apartment for the first time. His actions may give you some idea as to his feelings, though he is an accomplished diplomat and may conceal his real feelings entirely. But let me caution you not to be modest or soft-spoken. He will mistake softness for fear."

"All right," grinned Seaton. "In that case I won't wait to try to find out what he thinks. If he shows any signs of hostility at all, I'll open up on him."

"Well," remarked Crane, calmly, "if we have some

time to spare, we may as well wait comfortably instead of standing in the middle of the room. I, for one, have a lot of questions to ask about this new world."

Acting upon this suggestion, the party seated themselves upon comfortable divans, and Dunark rapidly dismantled the machine he had constructed. The captives remained standing, always behind the visitors, until Seaton remonstrated.

"Please sit down, everybody. There's no need of keeping up this farce of your being slaves as long as we're alone, is there, Dunark?"

"No, but at the first sound of the gong announcing a visitor we must be in our places. Now that we are all comfortable and waiting, I will introduce my party to yours."

"Fellow Kondalians, greet the Karfedo Seaton and Crane," he began, his tongue fumbling over the strange names, "of a distant world, the Earth, and the two noble ladies, Miss Vaneman and Miss Spencer, soon to be their Karfediro."

"Guests from Earth, allow me to present to you the Kofedir Sitar, the only one of my wives who accompanied me upon our ill-fated hunting expedition."

Then, still ignoring DuQuesne as a captive, he introduced the other Kondolians in turn as his brothers, sisters, cousins, nieces, and nephews—all members of the great ruling house of Kondal.

"Now," he concluded, "after I have a word with you in private, Doctor Seaton, I will be glad to give the others all the information in my power."

He led Seaton out of earshot of the others and said in a low voice:

"It is no part of Nalboon's plan to kill the two women. They are so beautiful, so different from our Osnomian women, that he intends to keep them—alive. Understand?"

"Yes," returned Seaton grimly, his eyes turning hard, "I get you all right—but what he'll do and what he thinks he'll do are two entirely different breeds of cats."

Returning to the others, they found Dorothy and Sitar deep in conversation.

"So a man has half a dozen or so wives?" Dorothy was asking in surprise. "How do you get along together? I'd fight like a wildcat if my husband tried to have other wives!"

"We get along splendidly, of course," returned the Osnomian princess in equal surprise. "I would not think of being a man's only wife. I wouldn't consider marrying a man who could win only one wife—think what a disgrace it would be! And think how lonely one would be while her husband is away at war—we would go insane if we did not have the company of the other wives. There are six of us, and we could not get along at all without each other."

"I've got a compliment for you and Peggy, Dottie," said Seaton. "Dunark here thinks that you two girls look good enough to eat—or words to that effect." Both girls flushed slightly, the purplish-black color suffusing their faces. They glanced at each other and Dorothy voiced the thought of both as she said:

"How can you, Kofedix Dumark? In this horrible light we both look perfectly dreadful. These other girls would be beautiful, if we were used to the colors, but we two look simply hideous."

"Oh, no," interrupted Sitar. "You have a wonderfully rich coloring. It is a shame to hide so much of yourselves with robes."

"Their eyes interpret colors differently than ours do," explained Seaton. "What to us are harsh and discordant colors are light and pleasing to their eyes. What looks like a kind of sloppy greenish black to us may—in fact, does—look a pale pink to them."

"Are Kondal and Mardonale the only two nations upon Osnome?" asked Crane.

"The only civilized nations, yes. Osnome is divided into two great and almost equal continents, separated by a wide ocean which encircles the globe. One is Kondal, the other Mardonale. Each nation has several nations or tribes of savages, which inhabit various waste places."

"YOU are the light race, Mardonale the dark," continued Crane. "What are the servants, who seem half-way between?"

"They are slaves . . ."

"Captured savages?" interrupted Dorothy.

"No. They are a separate race. They are a race so low in intelligence that they cannot exist except as slaves, but they can be trained to understand language and to do certain kinds of work. They are harmless and mild, making excellent servants, otherwise they would have perished ages ago. All menial work and most of the manual labor is done by the slave race. Formerly criminals were sterilized and reduced to unwilling slavery, but there have been no unwilling slaves in Kondal for hundreds of karkamo."

"Why? Are there no criminals any more?"

"No. With the invention of the thought recorder an absolutely fair trial was assured and the guilty were all convicted. They could not reproduce themselves, and as a natural result crime died out."

"That is," he added hastily, "what we regard as crime. Duelling, for instance, is a crime upon Earth; here it is a regular custom. In Kondal duels are rather rare and are held only when honor is involved, but here in Mardonale they are an every-day affair, as you saw when you landed."

"What makes the difference?" asked Dorothy curiously.

"As you know, with us every man is a soldier. In Kondal we train our youth in courage, valor, and high honor—in Mardonale they train them in savage blood-thirstiness alone. Each nation fixed its policy in bygone ages to produce the type of soldier it thought most efficient.

"I notice that everyone here wears those heavy collars," said Margaret. "What are they for?"

"They are identification marks. When a child is nearly grown, a collar bearing his name and the device of his house is cast about his neck. This collar is made of 'arenak,' a synthetic metal which, once formed, cannot be altered by any usual means. It cannot be

scratched, cut, bent, broken, or worked in any way except at such a high temperature that death would result, if such heat were applied to the collar. Once the arenak collar is cast about a person's neck he is identified for life, and any adult Osnomian not wearing a collar is put to death."

"That must be an interesting metal," remarked Crane. "Is your belt a similar mark?"

"This belt is an idea of my own," and Dunark smiled broadly. "It looks like opaque arenak, but isn't. It is merely a pouch in which I carry anything I am particularly interested in. Even Nalboon thought it was arenak, so he didn't trouble to try to open it. If he had opened it and taken my tools and instruments, I couldn't have built the educator."

"Is that transparent armor arenak?"

"Yes, the only difference being that nothing is added to the matrix to color or make opaque the finished metal. It is in the preparation of this metal that salt is indispensable. It acts only as a catalyst, being recovered afterward, but neither nation has ever had enough salt to make all the armor they want."

"Aren't those monsters—karlono, I think you called them—covered by the same thing? And what are those animals, anyway?" Dorothy asked.

"Yes, they are armored with arenak, and it is thought that the beasts grow it, the same as fishes grow scales. The karlono are the most frightful scourge of Osnome. Very little is known of them, though every scientist has theorized upon them since time immemorial. It is very seldom that one is ever killed, as they easily outfly our swiftest battleships, and only fight when they can be victorious. To kill one requires a succession of the heaviest high-explosive shells in the same spot, a joint in the armor; and after the armor is once penetrated, the animal is blown into such small fragments that reconstruction is impossible. From such remains it has been variously described as a bird, a beast, a fish, and a vegetable; sexual, asexual, and hermaphroditic. Its habitat is unknown, it being variously supposed to live high in the air, deep in the ocean, and buried in the swamps. Another theory is that they live upon one of our satellites, which encounters our belt of atmosphere every karkam. Nothing is certainly known about the monsters except their terrible destructiveness and their insatiable appetites. One of them will devour five or six airships at one time, absorbing the crews and devouring the cargo and all of the vessels except the very hardest of the metal parts."

"Do they usually go in groups?" asked Crane. "If they do, I should think that a fleet of warships would be necessary for every party."

"No, they are almost always found alone. Only very rarely are two found together. This is the first time in history that more than two have ever been seen together. Two battleships can always defeat one karlon, so they are never attacked. With four battleships Nalboon considered his expedition perfectly safe, especially as they are now rare. The navies hunted down and killed what was supposed to be the last one upon Osnome more than a karkam ago, and none have been seen since, until we were attacked . . ."

THE gong over the door sounded and the Kondalians leaped to their positions back of the Earthly visitors. The Kofedix went to the door. Nalboon brushed him aside and entered, escorted by a full company of heavily-armed soldiery. A scowl of anger was upon his face and he was plainly in an ugly mood.

"Stop, Nalboon of Mardonale!" thundered Seaton in the Mardonalian tongue and with the full power of his mighty voice. Dare you invade my privacy unannounced and without invitation?"

The escort shrank back, but the Domak stood his ground, although he was plainly taken aback. With an apparent effort he smoothed his face into lines of cordiality.

"I merely came to inquire why my guards are slain and my palace destroyed by my honored guest?"

"As for slaying your guards, they sought to invade my privacy. I warned them away, but one of them was foolish enough to try to kill me. Then the others attempted to raise their childish rifles against me, and I was obliged to destroy them. As for the wall, it happened to be in the way of the thought-waves I hurled against your guards—consequently it was demolished. An honored guest! Bah! Are honored guests put to the indignity of being touched by the filthy hands of a mere ladex?"

"You do not object to the touch of slaves!" with a wave of his hand toward the Kondalians.

"That is what slaves are for," coldly. "Is a Domak to wait upon himself in the court of Mardonale? But to return to the issue. Were I an honored guest this would never have happened. Know, Nalboon, that when you attempt to treat a visiting Domak of MY race as a low-born captive, you must be prepared to suffer the consequences of your rashness!"

"May I ask how you, so recently ignorant, know our language?"

"You question me? That is bold! Know that I, the Boss of the Road, show ignorance or knowledge, when and where I please. You may go."

CHAPTER XV.

The Escape from Mardonale

"THAT was a wonderful bluff, Dick!" exclaimed the Kofedix in English as soon as Nalboon and his guards had disappeared. "That was exactly the tone to take with him, too—you've sure got him guessing!"

"It seemed to get him, all right, but I'm wondering how long it'll hold him. I think we'd better make a dash for the Skylark right now, before he has time to think it over, don't you?"

"That is undoubtedly the best way," Dunark replied, lapsing into his own tongue. "Nalboon is plainly in awe of you now, but if I understand him at all, he is more than ever determined to seize your vessel, and every darkam's delay is dangerous."

The Earth-people quickly secured the few personal belongings they had brought with them. Stepping out into the hall and waving away the guards, Seaton motioned Dunark to lead the way. The other captives

fell in behind, as they had done before, and the party walked boldly toward the door of the palace. The guards offered no opposition, but stood at attention and saluted as they passed. As they approached the entrance, however, Seaton saw the major-domo hurrying away and surmised that he was carrying the news to Nalboon. Outside the door, walking directly toward the landing dock, Dunark spoke in a low voice to Seaton, without turning.

"Nalboon knows by this time that we are making our escape, and it will be war to the death from here to the Skylark. I do not think there will be any pursuit from the palace, but he has warned the officers in charge of the dock and they will try to kill us as soon as we step out of the elevator, perhaps sooner. Nalboon intended to wit, but we have forced his hand and the dock is undoubtedly swarming with soldiers now. Shoot first and oftenest. Shoot first and think afterward. Show no mercy, as you will receive none—remember that the quality you call 'mercy' does not exist upon Osnome."

Rounding a great metal statue about fifty feet from the base of the towering dock, they saw that the door leading into one of the elevators was wide open and that two guards stood just inside it. As they caught sight of the approaching party, the guards raised their rifles; but, quick as they were, Seaton was quicker. At the first sight of the open door he had made two quick steps and had hurled himself across the intervening forty feet in a long football plunge. Before the two guards could straighten, he crashed into them, his great momentum hurling them across the elevator cage and crushing them into unconsciousness against its metal wall.

"Good work!" said Dunark, as he preceded the others into the elevator, and, after receiving Seaton's permission, distributed the weapons of the two guards among the men of his party. "Now we can surprise those upon the roof. That was why you didn't shoot?"

"Yes, I was afraid to risk a shot—it would give the whole thing away," Seaton replied, as he threw the unconscious guards out into the grounds and closed the massive door.

"Aren't you going to kill them?" asked Sitar, amazement in every feature and a puzzled expression in her splendid eyes. A murmur arose from the other Kondalians, which was quickly silenced by the Kofedix.

"It is dishonorable for a soldier of Earth to kill a helpless prisoner," he said briefly. "We cannot understand it, but we must not attempt to sway him in any point of honor."

Dunark stepped to the controls and the elevator shot upward, stopping at a landing several stories below the top of the dock. He took a peculiar device from his belt and fitted it over the muzzle of his strange-pistol.

"We will get out here," he instructed the others, "and go up the rest of the way by a little-used flight of stairs. We will probably encounter some few guards, but I can dispose of them without raising an alarm. You will all stay behind me, please."

Seaton remonstrated, and Dunark went on:

"No, Seaton, you have done your share, and more.

I am upon familiar ground now, and can do the work alone better than if you were to help me. I will call upon you, however, before we reach the dock."

The Kofedix led the way, his pistol resting lightly against his hip, and at the first turn of the corridor they came full upon four guards. The pistol did not move from its place at the side of the leader, but there were four subdued clicks and the four guards dropped dead, with bullets through their brains.

"Seaton, that is *some* silencer," whispered DuQuesne. "I didn't suppose a silencer could work that fast."

"They don't use powder," Seaton replied absently, all his faculties directed toward the next corner. "The bullets are propelled by an electrical charge."

In the same manner Dunark disposed of several more guards before the last stairway was reached.

"SEATON," he whispered in English, "now is the time we need your rapid pistol-work and your high-explosive shells. There must be hundreds of soldiers on the other side of that door, armed with machine-cannon shooting high-explosive shells at the rate of a thousand per minute. Our chance is this—their guns are probably trained upon the elevators and main stairways, since this passage is unused and none of us would be expected to know of it. Most of them don't know of it themselves. It will take them a second or two to bring their guns to bear upon us. We must do all the damage we can—kill them all, if possible—in that second or two. If Crane will lend me a pistol, we'll make the rush together."

"I've a better scheme than that," interrupted DuQuesne. "Next to you, Seaton, I'm the fastest man with a gun here. Also, like you, I can use both hands at once. Give me a couple of clips of those special cartridges and you and I will blow that bunch into the air before they know we're here."

It was decided that the two pistol experts should take the lead, closely followed by Crane and Dunark. The weapons were loaded to capacity and put in readiness for instant use.

"Let's go, bunch!" said Seaton. "The quicker we start the quicker we'll get back. Get ready to run out there, all the rest of you, as soon as the battle's over. Ready? On your marks—get set—go!"

He kicked the door open and there was a stuttering crash as the four automatic pistols simultaneously burst into practically continuous flame—a crash obliterated by an overwhelming concussion of sound as the X-plosive shells, sweeping the entire roof with a rapidly-opening fan of death, struck their marks and exploded. Well it was for the little group of wanderers that the two men in the door were past masters in the art of handling their weapons; well it was that they had in their tiny pistol-bullets the explosive force of hundreds of giant shells! For rank upon rank of soldiery were massed upon the roof; rapid-fire cannon, terrible engines of destruction, were pointing toward the elevators and toward the main stairways and approaches. But so rapid and fierce was the attack, that even those trained gunners had no time to point their guns. The battle lasted little more than a second, being over before

either Crane or Dunark could fire a shot, and silence again reigned even while broken and shattered remnants of the guns and fragments of the metal and stone of the dock were still falling to the ground through a fine mist of what had once been men.

Assured by a rapid glance that not a single Mardonian remained upon the dock, Seaton turned back to the others.

"Make it snappy, bunch! This is going to be a mighty unhealthy spot for us in a few minutes."

Dorothy threw her arms around his neck in relief. With one arm about her, he hastily led the way across the dock toward the Skylark, choosing the path with care because of the yawning holes blown into the structure by the terrific force of the explosions. The Skylark was still in place, held immovable by the attractor, but what a sight she was! Her crystal windows were shattered; her mighty plates of four-foot Norwegian armor were bent and cracked and twisted; two of her doors, warped and battered, hung awry from their broken hinges. Not a shell had struck her: all this damage had been done by flying fragments of the guns and of the dock itself; and Seaton and Crane, who had developed the new explosive, stood aghast at its awful power.

They hastily climbed into the vessel, and Seaton assured himself that the controls were uninjured.

"I hear battleships," Dunark said. "Is it permitted that I operate one of your machine guns?"

"Go as far as you like," responded Seaton, as he placed the women beneath the copper bar—the safest place in the vessel—and leaped to the instrument board. Before he reached it, and while DuQuesne, Crane, and Dunark were hastening to the guns, the whine of giant helicopter-screws was plainly heard. A ranging shell from the first warship, sighted a little low, exploded against the side of the dock beneath them. He reached the levers just as the second shell screamed through the air a bare four feet above them. As he shot the Skylark into the air under five notches of power, a steady stream of the huge bombs poured through the spot where, an instant before, the vessel had been. Crane and DuQuesne aimed several shots at the battleships, which were approaching from all sides, but the range was so extreme that no damage was done.

They heard the continuous chattering of the machine gun operated by the Kofedix, however, and turned toward him. He was shooting, not at the warships, but at the city rapidly growing smaller beneath them; moving the barrel of the rifle in a tiny spiral; spraying the entire city with death and destruction! As they looked, the first of the shells reached the ground, just as Dunark ceased firing for lack of ammunition. They saw the palace disappear as if by magic, being instantly blotted out in a cloud of dust—a cloud which, with a spiral motion of dizzying rapidity, increased in size until it obscured the entire city.

HAVING attained sufficient altitude to be safe from any possible pursuit and out of range of even the heaviest guns, Seaton stopped the vessel and went out into the main compartment to consult with

the other members of the group, about their next move.

"It sure does feel good to get a breath of cool air, folks," he said, as he drew with relief a deep breath of the air, which, at that great elevation, was of an icy temperature and very thin. He glanced at the little group of Kondalians as he spoke, then leaped back to the instrument board with an apology on his lips—they were gasping for breath and shivering with the cold. He switched on the heating coils and dropped the Skylark rapidly in a long descent toward the ocean.

"If that is the temperature you enjoy, I understand at last why you wear clothes," said the Kofedix, as soon as he could talk.

"Do not your planes fly up into the regions of low temperature?" asked Crane.

"Only occasionally, and all high-flying vessels are enclosed and heated to our normal temperature. We have heavy wraps, but we dislike to wear them so intensely that we never subject ourselves to any cold."

"Well, there's no accounting for tastes," returned Seaton, "but I can't hand your climate a thing. It's hotter even than Washington in August; 'and that,' as the poet feelingly remarked, 'is going some!'"

"But there's no reason for sitting here in the dark," he continued, as he switched on the powerful daylight lamps which lighted the vessel with the nearest approach to sunlight possible to produce. As soon as the lights were on, Dorothy looked intently at the strange women.

"Now we can see what color they really are," she explained to her lover in a low voice. "Why, they aren't so very different from what they were before, except that the colors are much softer and more pleasing. They really are beautiful, in spite of being green. Don't you think so, Dick?"

"They're a handsome bunch, all right," he agreed, and they were. Their skins were a light, soft green, tanned to an olive shade by their many fervent suns. Their teeth were a brilliant and shining grass-green. Their eyes and their long, thick hair were a glossy black.

The Kondalians looked at the Earthly visitors and at each other, and the women uttered exclamations of horror.

"What a frightful light?" exclaimed Sitar. "Please shut it off. I would rather be in total darkness than look like this!"

"What's the matter, Sitar?" asked the puzzled Dorothy as Seaton turned off the lights. "You look perfectly stunning in this light."

"They see things differently than we do," explained Seaton. "Their optic nerves react differently than ours do. While we look all right to them, and they look all right to us, in both kinds of light, they look just as different to themselves under our daylight lamps as we do to ourselves in their green light. Is that explanation clear?"

"It's clear enough as far as it goes, but what do they look like to themselves?"

"That's too deep for me—I can't explain it, any better than you can. Take the Osnomian color 'mlap,' for instance. Can you describe it?"

"It's a kind of greenish orange—but it seems as

though it ought not to look like that color either."

"That's it, exactly. From the knowledge you received from the educator, it should be a brilliant purple. That is due to the difference in the optic nerves, which explains why we see things so differently from the way the Osnomians do. Perhaps they can describe the way they look to each other in our white light."

"Can you, Sitar?" asked Dorothy.

"One word describes it—'horrible,'" replied the Kondalian princess, and her husband added:

"The colors are distorted and unrecognizable, just as your colors are to your eyes in our light."

"Well, now that the color question is answered, let's get going. I pretty nearly asked you the way, Dunark—forgot that I know it as well as you do."

THE Skylark set off at as high an altitude as the Osnomians could stand. As they neared the ocean, several great Mardonian battleships, warned of the escape, sought to intercept them; but the Skylark hopped over them easily, out of range of their heaviest guns, and flew onward at such speed that pursuit was not even attempted. The ocean was quickly crossed. Soon the space-car came to rest over a great city, and Seaton pointed out the palace; which, with its landing dock nearby, was very similar to that of Nalboon, in the capital city of Mardonale.

Crane drew Seaton to one side.

"Do you think it is safe to trust these Kondalians, any more than it was the others? How would it be to stay in the Lark instead of going into the palace?"

"Yes, Mart, this bunch can be trusted. Dunark has a lot of darn queer ideas, but he's square as a die. He's our friend, and will get us the copper. We have no choice now, anyway, look at the bar. We haven't an ounce of copper left—we're down to the plating in spots. Besides, we couldn't go anywhere if we had a ton of copper, because the old bus is a wreck. She won't hold air—you could throw a cat out through the shell in any direction. She'll have to have a lot of work done on her before we can think of leaving. As to staying in her, that wouldn't help us a bit. Steel is as soft as wood to these folks—their shells would go through her as though she were made of mush. They are made of metal that is harder than diamond and tougher than rubber, and when they strike they bore in like drill-bits. If they are out to get us they'll do it anyway, whether we're here or there, so we may as well be guests. But there's no danger, Mart. You know I swapped brains with him, and I know him as well as I know myself. He's a good, square man—one of our kind of folks."

Convinced, Crane nodded his head and the Skylark dropped toward the dock. While they were still high in air, Dunark took an instrument from his belt and rapidly manipulated a small lever. The others felt the air vibrate—a peculiar, pulsating wave, which, to the surprise of the Earthly visitors, they could read without difficulty. It was a message from the Kofedix to the entire city, telling of the escape of his party and giving the news that he was accompanied by two great Karfedo from another world. Then the pulsations be-

came unintelligible, and all knew that he had tuned his instrument away from the "general" key into the individual key of some one person.

"I just let my father, the Karfedix, know that we are coming," he explained, as the vibrations ceased.

From the city beneath them hundreds of great guns roared forth a welcome, banners and streamers hung from every possible point, and the air became tinted and perfumed with a bewildering variety of colors and scents and quivered with the rush of messages of welcome. The Skylark was soon surrounded by a majestic fleet of giant warships, who escorted her with impressive ceremony to the landing dock, while around them flitted great numbers of other aircraft. The tiny one-man helicopters darted hither and thither, apparently always in imminent danger of colliding with some of their larger neighbors, but always escaping as though by a miracle. Beautiful pleasure-planes soared and dipped and wheeled like giant gulls; and, cleaving their stately way through the numberless lesser craft; immense multiplane passenger liners partially supported by helicopter screws turned aside from their scheduled courses to pay homage to the Kofedix of Kondal.

As the Skylark approached the top of the dock, all the escorting vessels dropped away and Crane saw that instead of the brilliant assemblage he had expected to see upon the landing-place there was only a small group of persons, as completely unadorned as were those in the car. In answer to his look of surprise, the Kofedix said, with deep feeling:

"My father, mother, and the rest of the family. They know that we, as escaped captives, would be without harness or trappings, and are meeting us in the same state."

SEATON brought the vessel to the dock near the little group, and the Earthly visitors remained inside their vessel while the rulers of Kondal welcomed the sons and daughters they had given up for dead.

After the affecting reunion, which was very similar to an earthly one under similar circumstances, the Kofedix led his father up to the Skylark and his guests stepped down upon the dock.

"Friends," Dunark began, "I have told you of my father, Roban, the Karfedix of Kondal. Father, it is a great honor to present to you those who rescued us from Mardonale—Seaton, Karfedix of Knowledge; Crane, Karfedix of Wealth; Miss Vaneman; and Miss Spencer. Karfedix DuQuesne," waving his hand toward him, "is a lesser Karfedix of Knowledge, captive to the others."

"The Kofedix Dunark exaggerates our services," deprecated Seaton, "and doesn't mention the fact that he saved all our lives. But for him we all should have been killed."

The Karfedix, disregarding Seaton's remark, acknowledged the indebtedness of Kondal in heartfelt accents before he led them back to the other party and made the introductions. As all walked toward the elevators, the emperor turned to his son with a puzzled expression.

"I know from your message, Dunark, that our guests

are from a distant solar system, and I can understand your accident with the educator, but I cannot understand the titles of these men. Knowledge and wealth are not ruled over. Are you sure that you have translated their titles correctly?"

"As correctly as I can—we have no words in our language to express the meaning. Their government is a most peculiar one, the rulers all being chosen by the people of the whole nation . . ."

"Extraordinary!" interjected the older man. "How, then, can anything be accomplished?"

"I do not understand the thing myself, it is so utterly unheard-of. But they have no royalty, as we understand the term. In America, their country, every man is equal.

"That is," he hastened to correct himself, "they are not all equal, either, as they have two classes which would rank with royalty—those who have attained to great heights of knowledge and those who have amassed great wealth. This explanation is entirely inadequate and does not give the right idea of their positions, but it is as close as I can come to the truth in our language."

"I am surprised that you should be carrying a prisoner with you, Karfedo," said Roban, addressing Seaton and Crane. "You will, of course, be at perfect liberty to put him to death in any way that pleases you, just as though you were in your own kingdoms. But perchance you are saving him so that his death will crown your home-coming?"

The Kofedix spoke in answer while Seaton, usually so quick to speak, was groping for words.

"No, father, he is not to be put to death. That is another peculiar custom of the Earth-men; they consider it dishonorable to harm a captive, or even an unarmed enemy. For that reason we must treat the Karfedix DuQuesne with every courtesy due his rank, but at the same time he is to be allowed to do only such things as may be permitted by Seaton and Crane."

"Yet they do not seem to be a weak race," mused the older man.

"They are a mighty race, far advanced in evolution," replied his son. "It is not weakness, but a peculiar moral code. We have many things to learn from them, and but few to give them in return. Their visit will mean much to Kondal."

DURING this conversation they had descended to the ground and had reached the palace, after traversing grounds even more sumptuous and splendid than those surrounding the palace of Nalboon. Inside the palace walls the Kofedix himself led the guests to their rooms, accompanied by the major-domo and an escort of guards. He explained to them that the rooms were all inter-communicating, each having a completely equipped bathroom.

"Complete except for cold water, you mean," said Seaton with a smile.

"There is cold water," rejoined the other, leading him into the bathroom and releasing a ten-inch stream of lukewarm water into the small swimming pool, built of polished metal, which forms part of every Kon-

dalian bathroom. "But I am forgetting that you like extreme cold. We will install refrigerating machines at once."

"Don't do it—thanks just the same. We won't be here long enough to make it worth while."

Dunark smilingly replied that he would make his guests as comfortable as he could, and after informing them that in one kam he would return and escort them in to koprat, took his leave. Scarcely had the guests freshened themselves when he was back, but he was no longer the Dunark they had known. He now wore a metal-and-leather harness which was one blaze of precious gems, and a leather belt hung with jeweled weapons replaced the familiar hollow girdle of metal. His right arm, between the wrist and the elbow, was almost covered by six bracelets of a transparent metal, deep cobalt-blue in color, each set with an incredibly brilliant stone of the same shade. On his left wrist he wore an Osnomian chronometer. This was an instrument resembling the odometer of an automobile, whose numerous revolving segments revealed a large and constantly increasing number—the date and time of the Osnomian day, expressed in a decimal number of the karkamo of Kondalian history.

"Greetings, oh guests from Earth! I feel more like myself, now that I am again in my trappings and have my weapons at my side. Will you accompany me to koprat, or are you not hungry?" as he attached the peculiar timepieces to the wrists of the guests, with bracelets of the deep-blue metal.

"We accept with thanks," replied Dorothy promptly. "We're starving to death, as usual."

As they walked toward the dining hall, Dunark noticed that Dorothy's eyes strayed toward his bracelets, and he answered her unasked question:

"These are our wedding rings. Man and wife exchange bracelets as part of the ceremony."

"Then you can tell whether a man is married or not, and how many wives he has, simply by looking at his arm? We should have something like that on Earth, Dick—then married men wouldn't find it so easy to pose as bachelors!"

Roban met them at the door of the great dining hall. He also was in full panoply, and Dorothy counted ten of the heavy bracelets upon his right arm as he led them to places near his own. The room was a replica of the other Osnomian dining hall they had seen and the women were decorated with the same barbaric splendor of scintillating gems.

After the meal, which was a happy one, taking the nature of a celebration in honor of the return of the captives, DuQuesne went directly to his room while the others spent the time until the zero hour in strolling about the splendid grounds, always escorted by many guards. Returning to the room occupied by the two girls, the couples separated, each girl accompanying her lover to the door of his room.

Margaret was ill at ease, though trying hard to appear completely self-possessed.

"What is the matter, sweetheart Peggy?" asked Crane, solicitously.

"I didn't know that you . . ." she broke off and

continued with a rush: "What did the Kofedix mean just now, when he called you the Karfedix of Wealth?"

"Well, you see, I happen to have some money . . ." he began.

"Then you are the great M. Reynolds Crane?" she interrupted, in consternation.

"Leave off 'the great,'" he said, then, noting her expression, he took her in his arms and laughed slightly.

"Is that all that was bothering you? What does a little money amount to between you and me?"

"Nothing—but I'm awfully glad that I didn't know it before," she replied, as she returned his caress with fervor. "That is, it means nothing if you are perfectly sure I'm not . . ."

Crane, the imperturbable, broke a life-long rule and interrupted her.

"Do not say that, dear. You know as well as I do that between you and me there never have been, are not now, and never shall be, any doubts or any questions."

"IF I could have a real cold bath now, I'd feel fine," remarked Seaton, standing in his own door with Dorothy by his side. "I'm no blooming Englishman, but in weather as hot as this I sure would like to dive into a good cold tank. How do you feel after all this excitement, Dottie? Up to standard?"

"I'm scared purple," she replied, nestling against him, "or, at least, if not exactly scared, I'm apprehensive and nervous. I always thought I had good nerves, but everything here is so horrible and unreal, that I can't help but feel it. When I'm with you I really enjoy the experience, but when I'm alone or with Peggy, especially in the sleeping-period, which is so awfully long and when it seems that something terrible is going to happen every minute, my mind goes off in spite of me into thoughts of what may happen. Why, last night, Peggy and I just huddled up to each other in a ghastly yellow funk—dreading we knew not what—the two of us slept hardly at all."

"I'm sorry, little girl," replied Seaton, embracing her tenderly, "sorrrier than I can say. I know that your nerves are all right, but you haven't roughed it enough, or lived in strange environments enough, to be able to feel at home. The reason you feel safer with me is that I feel perfectly at home here myself, not that your nerves are going to pieces or anything like that. It won't be for long, though, sweetheart—as soon as we get the chariot fixed up we'll beat it back to the Earth so fast it'll make your head spin."

"Yes, I think that's the reason, lover. I hope you won't think I'm a clinging vine, but I can't help being afraid of something here every time I'm away from you. You're so self-reliant, so perfectly at ease here, that it makes me feel the same way."

"I am perfectly at ease. There's nothing to be afraid of. I've been in hundreds of worse places, right on Earth. I sure wish I could be with you all the time, sweetheart girl—only you can understand just how much I wish it—but, as I said before, it won't be long until we can be together all the time."

Dorothy pushed him into his room, followed him within it, closed the door, and put both hands on his arm.

"Dick, sweetheart," she whispered, while a hot blush suffused her face, "you're not as dumb as I thought you were—you're dumber! But if you simply won't say it, I will. Don't you know that a marriage that is legal where it is performed is legal anywhere, and that no law says that the marriage must be performed upon the Earth?"

He pressed her to his heart in a mighty embrace, and his low voice showed in every vibration the depth of the feeling he held for the beautiful woman in his arms as he replied:

"I never thought of that, sweetheart, and I wouldn't have dared mention it if I had. You're so far away from your family and your friends that it would seem . . ."

"It wouldn't seem anything of the kind," she broke in earnestly. "Don't you see, you big, dense, wonderful man, that it is the only thing to do? We need each other, or at least, I need you, so much now . . ."

"Say 'each other'; it's right," declared her lover with fervor.

"It's foolish to wait. Mother would like to have seen me married, of course; but there will be great advantages, even on that side. A grand wedding, of the kind we would simply have to have in Washington, doesn't appeal to me any more than it does to you—and it would bore you to extinction. Dad would hate it, too—it's better all around to be married here."

Seaton, who had been trying to speak, silenced her.

"I'm convinced, Dottie, have been ever since the first word. If you can see it that way I'm so glad that I can't express it. I've been scared stiff every time I thought of our wedding. I'll speak to the Karfedix the first thing in the morning, and we'll be married tomorrow—or rather today, since it is past the zero kam," as he glanced at the chronometer upon his wrist, which, driven by wireless impulses from the master-clock in the national observatory, was clicking off the darkamo with an almost inaudible purr of its smoothly-revolving segments.

"How would it be to wake him up and have it done now?"

"Oh, Dick, be reasonable! That would never do. Tomorrow will be most awfully sudden, as it is! And Dick, please speak to Martin, will you? Peggy's even more scared than I am, and Martin, the dear old stupid, is even less likely to suggest such a thing as this kind of a wedding than you are. Peggy's afraid to suggest it to him."

"Woman!" he said in mock sternness, "Is this a put-up job?"

"It certainly is. Did you think I had nerve enough to do it without help?"

Seaton turned and opened the door.

"Mart! Bring Peggy over here!" he called, as he led Dorothy back into the girls' room.

"Heavens, Dick, be careful! You'll spoil the whole thing!"

"No, I won't. Leave it to me—I bashfully admit

that I'm a regular bear-cat at this diplomatic stuff. Watch my smoke!"

"Folks," he said, when the four were together, "Dottie and I have been talking things over, and we've decided that today's the best possible date for a wedding. Dottie's afraid of these long, daylight nights, and I admit that I'd sleep a lot sounder if I knew where she was all the time instead of only part of it. She says she's willing, provided you folks see it the same way and make it double. How about it?"

Margaret blushed furiously and Crane's lean, handsome face assumed a darker color as he replied:

"A marriage here would, of course, be legal anywhere, provided we have a certificate, and we could be married again upon our return if we think it desirable. It might look as though we were taking an unfair advantage of the girls, Dick, but considering all the circumstances, I think it would be the best thing for everyone concerned."

He saw the supreme joy in Margaret's eyes, and his own assumed a new light as he drew her into the hollow of his arm.

"Peggy has known me only a short time, but nothing else in the world is as certain as our love. It is the bride's privilege to set the date, so I will only say that it cannot be too soon for me."

"The sooner the better," said Margaret, with a blush that would have been divine in any earthly light, "did you say 'today,' Dick?"

"I'll see the Karfedix as soon as he gets up," he answered, and walked with Dorothy to his door.

"I'm just too supremely happy for words," Dorothy whispered in Seaton's ear as he bade her good-night. "I won't be able to sleep or anything!"

CHAPTER XVI.

An Osnomian Marriage

SEATON awoke, hot and uncomfortable, but with a great surge of joy in his heart—this was his wedding day! Springing from the bed, he released the full stream of the "cold" water, filling the tank in a few moments. Poising lightly upon the edge, he made a clean, sharp dive, and yelled in surprise as he came snorting to the surface. For Dunark had made good his promise—the water was only a few degrees above the freezing point! After a few minutes of vigorous splashing in the icy water, he rubbed himself down with a coarse towel, shaved, threw on his clothes, and lifted his powerful, but musical, bass voice in the wedding chorus from "The Rose Maiden."

"Rise, sweet maid, arise, arise,

"Rise, sweet maid, arise, arise,

"'Tis the last fair morning for thy maiden eyes,"

he sang lustily, out of his sheer joy in being alive, and was surprised to hear Dorothy's clear soprano, Margaret's pleasing contralto, and Crane's mellow tenor chime in from the adjoining room. Crane threw open the door and Seaton joined the others.

"Good morning, Dick, you sound happy," said Crane.

"Who wouldn't be? Look what's doing today," as he ardently embraced his bride-to-be. "Besides, I found some cold water this morning."

"Everyone in the palace heard you discovering it," dryly returned Crane, and the girls laughed merrily.

"It surprised me at first," admitted Seaton, "but it's great after a fellow once gets wet."

"We warmed ours a trifle," said Dorothy. "I like a cold bath myself, but not in ice-water."

All four became silent, thinking of the coming event of the day, until Crane said:

"They have ministers here, I know, and I know something of their religion, but my knowledge is rather vague. You know more about it than we do, Dick, suppose you tell us about it while we wait."

Seaton paused a moment, with an odd look on his face. As one turning the pages of an unfamiliar book of reference, he was seeking the answer to Crane's question in the vast store of Osnomian information received from Dunark. His usually ready speech came a little slowly.

"Well, as nearly as I can explain it, it's a funny kind of a mixture—partly theology, partly Darwinism, or at least, making a fetish of evolution, and partly pure economic determinism. They believe in a Supreme Being, whom they call the First Cause—that is the nearest English equivalent—and they recognize the existence of an immortal and unknowable life-principle, or soul. They believe that the First Cause has decreed the survival of the fittest as the fundamental law, which belief accounts for their perfect physiques . . ."

"Perfect physiques? Why, they're as weak as children," interrupted Dorothy.

"Yes, but that is because of the smallness of the planet," returned Seaton. "You see, a man of my size weighs only eighty-six pounds here, on a spring balance, so he would need only the muscular development of a boy of twelve or so. In a contest of strength, either of you girls could easily handle two of the strongest men upon Osnome. In fact, the average Osnomian could stand up on our Earth only with the greatest difficulty. But that isn't the fault of the people; they are magnificently developed for their surroundings. They have attained this condition by centuries of weeding out the unfit. They have no hospitals for the feeble-minded or feeble-bodied—abnormal persons are not allowed to live. The same reasoning accounts for their perfect cleanliness, moral and physical. Vice is practically unknown. They believe that clean living and clean thinking are rewarded by the production of a better physical and mental type . . ."

"Yes, especially as they correct wrong living by those terrible punishments the Kofedix told us about," interrupted Margaret.

"That probably helps some. They also believe that the higher the type is, the faster will evolution proceed, and the sooner will mankind reach what they call the Ultimate Goal, and know all things. Believing as they do that the fittest must survive, and thinking themselves, of course, the superior type, it is ordained that Mardonale must be destroyed utterly, root and branch. They believe that the slaves are so low in the scale, millions of years behind in evolution, that they do not count. Slaves are simply intelligent and docile animals, little more than horses or oxen. Mardonilians and

savages are unfit to survive and must be exterminated.

"Their ministers are chosen from the very fittest. They are the strongest, cleanest-living, and most vigorous men of this clean and vigorous nation, and are usually high army officers as well as ministers."

AN attendant announced the coming of the Karfedix and his son, to pay the call of state. After the ceremonious greetings had been exchanged, all went into the dining hall for darprat. As soon as the meal was over, Seaton brought up the question of the double wedding that kokam, and the Karfedix was overjoyed.

"Karfedix Seaton," he said earnestly, "nothing could please us more than to have such a ceremony performed in our palace. Marriage between such highly-evolved persons as are you four is wished by the First Cause, whose servants we are. Aside from that, it is an unheard-of honor for any ruler to have even one karfedix married beneath his roof, and you are granting me the privilege of two! I thank you, and assure you that we will do our poor best to make the occasion memorable."

"Don't do anything fancy," said Seaton hastily. "A simple, plain wedding will do."

Unheeding Seaton's remark, the Karfedix took his wireless from its hook at his belt and sent a brief message.

"I have summoned Karbiv Tarnan to perform the ceremony. Our usual time for ceremonies is just before koprat—is that time satisfactory to you?"

Assured that it was, he turned to his son.

"Dunark, you are more familiar than I with the customs of our illustrious visitors. May I ask you to take charge of the details?"

While Dunark sent a rapid succession of messages, Dorothy whispered to Seaton:

"They must be going to make a real function of our double wedding, Dick. The Karbix is the highest dignitary of the church, isn't he?"

"Yes, in addition to being the Commander-in-Chief of all the Kondalian armies. Next to the Karfedix he is the most powerful man in the empire. Something tells me, Dottie, that this is going to be SOME ceremony!"

As Dunark finished telegraphing, Seaton turned to him.

"Dorothy said, a while ago, that she would like to have enough of that tapestry-fabric for a dress. Do you suppose it could be managed?"

"Certainly. In all state ceremonials we always wear robes made out of the same fabric as the tapestries, but much finer and more delicate. I would have suggested it, but thought perhaps the ladies would prefer their usual clothing. I know that you two men do not care to wear our robes?"

"We will wear white ducks, the dressiest and coolest things we have along," replied Seaton. "Thank you for your offer, but you know how it is. We should feel out of place in such gorgeous dress."

"I understand. I will call in a few of our most expert robe-makers, who will weave the gowns. Before they come, let us decide upon the ceremony. I think

you are familiar with our marriage customs, but I will explain them to make sure. Each couple is married twice. The first marriage is symbolized by the exchange of plain bracelets and lasts four karkamo, during which period divorce may be obtained at will. The children of such divorced couples formerly became wards of the state, but in my lifetime I have not heard of there being any such children—all divorces are now between couples who discover their incompatibility before children are conceived."

"That surprises me greatly," said Crane. "Some system of trial-marriage is advocated among us on Earth every few years, but they all so surely degenerate into free love that no such system has found a foothold."

"We are not troubled in that way at all. You see, before the first marriage, each couple, from the humblest peasantry to the highest royalty, must submit to a mental examination. If they are marrying for any reason at all other than love, such as any thought of trifling in the mind of the man, or if the woman is marrying him for his wealth or position, he or she is summarily executed, regardless of station."

No other questions being asked, Dunark continued:

"At the end of four karkamo the second marriage is performed, which is indissoluble. In this ceremony jeweled bracelets are substituted for the plain ones. In the case of highly-evolved persons it is permitted that the two ceremonies be combined into one. Then there is a third ceremony, used only in the marriage of persons of the very highest evolution, in which the 'eternal' vows are taken and the faldon, the eternal jewel, is exchanged. As you are all in the permitted class, you may use the eternal ceremony if you wish."

"I think we all know our minds well enough to know that we want to be married for good—the longer the better," said Seaton, positively. "We'll make it the eternal, won't we, folks?"

"I should like to ask one question," said Crane, thoughtfully. "Does that ceremony imply that my wife would be breaking her vows if she married again upon my death?"

"Far from it. Numbers of our men are killed every karkam. Their wives, if of marriageable age, are expected to marry again. Then, too, you know that most Kondalian men have several wives. No matter how many wives or husbands may be linked together in that way, it merely means that after death their spirits will be grouped into one. Just as in your chemistry," smiling in comradely fashion at Seaton, "a varying number of elements may unite to form a stable compound."

AFTER a short pause, the speaker went on:

"Since you are from the Earth and unaccustomed to bracelets, rings will be substituted for them. The plain rings will take the place of your Earthly wedding rings, the jeweled ones that of your engagement rings. The only difference is that while we discard the plain bracelets, you will continue to wear them. Have you men any objections to wearing the rings during the ceremony? You may discard them

later if you wish and still keep the marriage valid."

"Not I! I'll wear mine all my life," responded Seaton earnestly, and Crane expressed the same thought.

"There is only one more thing," added the Kofedix. "That is, about the mental examination. Since it is not your custom, it is probable that the justices would waive the ruling, especially since everyone must be examined by a jury of his own or a superior rank, so that only one man, my father alone, could examine you."

"Not in a thousand years!" replied Seaton emphatically. "I want to be examined, and have Dorothy see the record. I don't care about having her put through it, but I want her to know exactly the kind of a guy she is getting."

Dorothy protested at this, but as all four were eager that they themselves should be tested, the Kofedix was notified and Dunark clamped sets of multiple electrodes, connected to a set of instruments, upon the temples of his father, Dorothy, and Seaton. He pressed a lever, and instantly Dorothy and Seaton read each other's minds to the minutest detail, and each knew that the Kofedix was reading the minds of both.

After Margaret and Crane had been examined, the Kofedix expressed himself as more than satisfied.

"You are all of the highest evolution and your minds are all untainted by any base thoughts in your marriage. The First Cause will smile upon your unions," he said solemnly.

"Let the robe-makers appear," the Kofedix ordered, and four women, hung with spools of brilliantly-colored wire of incredible fineness and with peculiar looms under their arms, entered the room and accompanied the two girls to their apartment.

As soon as the room was empty save for the four men, Dunark said:

"While I was in Mardonale, I heard bits of conversation regarding an immense military discovery possessed by Nalboon, besides the gas whose deadly effects we felt. I could get no inkling of its nature, but feel sure that it is something to be dreaded. I also heard that both of these secrets had been stolen from Kondal, and that we were to be destroyed by our own superior inventions."

The Kofedix nodded his head gloomily.

"That is true, my son—partly true, at least. We shall not be destroyed, however. Kondal shall triumph. The discoveries were made by a Kondalian, but I am as ignorant as are you concerning their nature. An obscure inventor, living close to the bordering ocean, was the discoverer. He was rash enough to wireless me concerning them. He would not reveal their nature, but requested a guard. The Mardonalian patrol intercepted the message and captured both him and his discoveries before our guard could arrive."

"That's easily fixed," suggested Seaton. "Let's get the Skylark fixed up, and we'll go jerk Nalboon out of his palace—if he's still alive—bring him over here, and read his mind."

"That might prove feasible," answered the Kofedix, "and in any event we must repair the Skylark and replenish her supply of copper immediately. That must

be our first consideration, so that you, our guests, will have a protection in any emergency."

The Karfedix went to his duties and the other three made their way to the wrecked space-car. They found that besides the damage done to the hull, many of the instruments were broken, including one of the object-compasses focused upon the Earth.

"It's a good thing you had three of them, Mart. I sure hand it to you for preparedness," said Seaton, as he tossed the broken instruments out upon the dock. Dunark protested at this treatment, and placed the discarded instruments in a strong metal safe, remarking:

"These things may prove useful at some future time."

"Well, I suppose the first thing to do is to get some powerful jacks and straighten these plates," said Seaton.

"Why not throw away this soft metal, steel, and build it of arenak, as it should be built? You have plenty of salt," suggested Dunark.

"Fine! We have lots of salt in the galley, haven't we, Mart?"

"Yes, nearly a hundred pounds. We are stocked for emergencies, with two years' supply of food, you know."

DUNARK'S eyes opened in astonishment at the amount mentioned, in spite of his knowledge of earthly conditions. He started to say something, then stopped in confusion, but Seaton divined his thought.

"We can spare him fifty pounds as well as not, can't we, Mart?"

"Certainly. Fifty pounds of salt is a ridiculously cheap price for what he is doing for us, even though it is very rare here."

Dunark acknowledged the gift with shining eyes and heartfelt, but not profuse, thanks, and bore the precious bag to the palace under a heavy escort. He returned with a small army of workmen, and after making tests to assure himself that the power-bar would work as well through arenak as through steel, he instructed the officers concerning the work to be done. As the wonderfully skilled mechanics set to work without a single useless motion, the prince stood silent, with a look of care upon his handsome face.

"Worrying about Mardonale, Dunark?"

"Yes. I cannot help wondering what that terrible new engine of destruction is, which Nalboon now has at his command."

"Say, why don't you build a bus like the Skylark, and blow Mardonale off the map?"

"Building the vessel would be easy enough, but X is as yet unknown upon Osnome."

"We've got a lot of it . . ."

"I could not accept it. The salt was different, since you have plenty. X, however, is as scarce upon Earth as salt is upon Osnome."

"Sure you can accept it. We stopped at a planet that has lots of it, and we've got an object-compass pointing at it so that we can go back and get more of it any time we want it. We've got more of it on hand

now than we're apt to need for a long time, so have a hunk and get busy," and he easily carried one of the lumps out of his cabin and tossed it upon the dock, from whence it required two of Kondal's strongest men to lift it.

The look of care vanished from the face of the prince and he summoned another corps of mechanics.

"How thick shall the walls be? Our battleships are armed with arenak the thickness of a hand, but with your vast supply of salt you may have it any thickness you wish, since the materials of the matrix are cheap and abundant."

"One inch would be enough, but everything in the bus is designed for a four-foot shell, and if we change it from four feet we'll have to redesign our guns and all our instruments. Let's make it four feet."

Seaton turned to the crippled Skylark, upon which the first crew of Kondalian mechanics were working with skill and with tools undreamed-of upon Earth. The whole interior of the vessel was supported by a complex falsework of latticed metal, then the four-foot steel plates and the mighty embers, the pride of the great MacDougall, were cut away as though they were made of paper by revolving saws and enormous power shears. The sphere, grooved for the repellers and with the members, braces, and central machinery complete, of the exact dimensions of the originals, was rapidly moulded of a stiff, plastic substance resembling clay. This matrix soon hardened into a rock-like mass into which the doors, machine-gun emplacements, and other openings were carefully cut. All surfaces were then washed with a dilute solution of salt, which the workmen handled as though it were radium. Two great plates of platinum were clamped into place upon either side of the vessel, each plate connected by means of silver cables as large as a man's leg to the receiving terminal of an enormous wireless power station. The current was applied and the great spherical mass apparently disappeared, being transformed instantly into the transparent metal arenak. Then indeed had the Earthmen a vehicle such as had never been seen before! A four-foot shell of metal five hundred times as strong and hard as the strongest and hardest steel, cast in one piece with the sustaining framework designed by the world's foremost engineer—a structure that no conceivable force could deform or injure, housing an inconceivable propulsive force!

THE falsework was rapidly removed and the sustaining framework was painted with opaque varnish to render it plainly visible. At Seaton's suggestion the walls of the cabins were also painted, leaving transparent several small areas to serve as windows.

The second work-period was drawing to a close, and as Seaton and Crane were to be married before koprat, they stopped work. They marveled at the amount that had been accomplished, and the Kofedix told them:

"Both vessels will be finished tomorrow, except for the controlling instruments, which we will have to make ourselves. Another crew will work during the sleeping-period, installing the guns and other fittings.

Do you wish to have your own guns installed, or guns

of our pattern? You are familiar with them now."

"Our own, please. They are slower and less efficient than yours, but we are used to them and have a lot of X-plosive ammunition for them," replied Seaton, after a short conference with Crane.

After instructing the officers in charge of the work, the three returned to the palace, the hearts of two of them beating high in anticipation. Seaton went into Crane's room, accompanied by two attendants bearing his suitcase and other luggage.

"We should have brought along dress clothes, Mart. Why didn't you think of that, too?"

"Nothing like this ever entered my mind. It is a good thing we brought along ducks and white soft shirts. I must say that this is extremely informal garb for a state wedding, but since the natives are ignorant of our customs, it will not make any difference."

"That's right, too—we'll make 'em think it's the most formal kind of dress. Dunark knows what's what, but he knows that full dress would be unbearable here. We'd melt down in a minute. It's plenty hot enough as it is, with only duck trousers and sport-shirts on. They'll look green instead of white, but that's a small matter."

Dunark, as best man, entered the room some time later.

"Give us a look, Dunark," begged Seaton, "and see if we'll pass inspection. I was never so rattled in my life."

They were clad in spotless white, from their duck oxfords to the white ties encircling the open collars of their tennis shirts. The two tall figures—Crane's slender, wiry, at perfect ease; Seaton's broad-shouldered, powerful, prowling about with unconscious, feline suppleness and grace—and the two handsome, high-bred, intellectual faces, each wearing a look of eager happiness, fully justified Dunark's answer.

"You sure will do!" he pronounced enthusiastically, and with Seaton's own impulsive good will he shook hands and wished them an eternity of happiness.

"When you have spoken with your brides," he continued, "I shall be waiting to escort you into the chapel. Sitar told me to say that the ladies are ready."

Dorothy and Margaret had been dressed in their bridal gowns by Sitar and several other princesses, under the watchful eyes of the Karfedir herself. Sitar placed the two girls side by side and drew off to survey her work.

"You are the loveliest creatures in the whole world!" she cried.

They looked at each other's glittering gowns, then Margaret glanced at Dorothy's face and a look of dismay overspread her own.

"Oh, Dottie!" she gasped. "Your lovely complexion! Isn't it terrible for the boys to see us in this light?"

There was a peal of delighted laughter from Sitar and she spoke to one of the servants, who drew dark curtains across the windows and pressed a switch, flooding the room with brilliant white light.

"Dunark installed lamps like those of your ship for you," she explained with intense satisfaction. "I knew

in advance just how you would feel about your color."

Before the girls had time to thank their thoughtful hostess she disappeared and their bridegrooms stood before them. For a moment no word was spoken. Seaton stared at Dorothy hungrily, almost doubting the evidence of his senses. For white was white, pink was pink, and her hair shone in all its natural splendor of burnished bronze.

In their wondrous Osnomian bridal robes the beautiful Earth-maidens stood before their lovers. Upon their feet were jeweled slippers. Their lovely bodies were clothed in softly shimmering garments that left their rounded arms and throats bare—garments infinitely more supple than the finest silk, thick-woven of metallic threads of such fineness that the individual wires were visible only under a lens; garments that floated and clung about their perfect forms in lines of exquisite grace. For black-haired Margaret, with her ivory skin, the Kondalian princess had chosen a background of a rare white metal, upon which, in complicated figures, glistened numberless jewels of pale colors, more brilliant than diamonds. Dorothy's dress was of a peculiar, dark-green shade, half-hidden by an intricate design of blazing green gems—the strange, luminous jewels of this strange world. Both girls wore their long, heavy hair unbound, after the Kondalian bridal fashion, brushed until it fell like mist about them and confined at the temples by metallic bands entirely covered with jewels.

Seaton looked from Dorothy to Margaret and back again; looked down into her violet eyes, deep with wonder and with love, more beautiful than any jewel in all her gorgeous costume. Unheeding the presence of the others, she put her dainty hands upon his mighty shoulders and stood on tiptoe.

"I love you, Dick. Now and always, here or at home or anywhere in the Universe. We'll never be parted again," she whispered, and her own beloved violin had no sweeter tones than had her voice.

A few minutes later, her eyes wet and shining, she drew herself away from him and glanced at Margaret.

"Isn't she the most beautiful thing you ever laid eyes on?"

"No," Seaton answered promptly, "she is not—but poor old Mart thinks she is!"

ACCOMPANIED by the Karfedix and his son, Seaton and Crane went into the chapel, which, already brilliant, had been decorated anew with even greater splendor. Glancing through the wide arches they saw, for the first time, Osnomians clothed. The great room was filled with the highest nobility of Kondal, wearing their heavily-jeweled, resplendent robes of state. Every color of the rainbow and numberless fantastic patterns were there, embodied in the soft, lustrous, metallic fabric.

As the men entered one door Dorothy and Margaret, with the Karfedir and Sitar, entered the other, and the entire assemblage rose to its feet and snapped into the grand salute. Moving to the accompaniment of strange martial music from concealed instruments, the two parties approached each other, meeting at the

raised platform or pulpit where Karbix Tarnan, a handsome, stately, middle-aged man who carried easily his hundred and fifty karkamo of age, awaited them. As he raised his arms, the music ceased.

It was a solemn and wonderfully impressive spectacle. The room, of burnished metal, with its bizarre decorations wrought in scintillating gems; the constantly changing harmony of colors as the invisible lamps were shifted from one shade to another; the group of mighty nobles standing rigidly at attention in a silence so profound that it was an utter absence of everything audible as the Karbix lifted both arms in a silent invocation of the great First Cause—all these things deepened the solemnity of that solemn moment.

When Tarnan spoke, his voice, deep with some great feeling, inexplicable even to those who knew him best, carried clearly to every part of the great chamber.

"Friends, it is our privilege to assist today in a most notable event, the marriage of four personages from another world. For the first time in the history of Osnome, one karfedix has the privilege of entertaining the bridal party of another. It is not for this fact alone, however, that this occasion is to be memorable. A far deeper reason is that we are witnessing, possibly for the first time in the history of the Universe, the meeting upon terms of mutual fellowship and understanding of the inhabitants of two worlds separated by unthinkable distances of trackless space and by equally great differences in evolution, conditions of life, and environment. Yet these strangers are actuated by the spirit of good faith and honor which is instilled into every worthy being by the great First Cause, in the working out of whose vast projects all things are humble instruments.

"In honor of the friendship of the two worlds, we will proceed with the ceremony.

"Richard Seaton and Martin Crane, exchange the plain rings with Dorothy Vaneman and Margaret Spencer."

They did so, and repeated, after the Karbix, simple vows of love and loyalty.

"May the First Cause smile upon this temporary marriage and render it worthy of being made permanent. As a lowly servant of the all-powerful First Cause I pronounce you two, and you two, husband and wife. But we must remember that the dull vision of mortal man cannot pierce the veil of futurity, which is as crystal to the all-beholding eye of the First Cause. Though you love each other truly, unforeseen things may come between you to mar the perfection of your happiness. Therefore a time is granted you during which you may discover whether or not your unions are perfect."

A pause ensued, then Tarnan went on:

"Martin Crane, Margaret Spencer, Richard Seaton, and Dorothy Vaneman, you are before us to take the final vows which shall bind your bodies together for life and your spirits together for eternity. Have you considered the gravity of this step sufficiently to enter into this marriage without reservation?"

"I have," solemnly replied the four, in unison.

"Exchange the jeweled rings. Do you, Richard

Seaton and Dorothy Vaneman; and you, Martin Crane and Margaret Spencer; individually swear, here in the presence of the First Cause and that of the Supreme Justices of Kondal, that you will be true and loyal, each helping his chosen one in all things, great and small; that never throughout eternity, in thought or in action, will either your body or your mind or your conscious spirit stray from the path of fairness and truth and honor?"

"I do."

"I pronounce you married with the eternal marriage. Just as the faidon which you each now wear—the eternal jewel which no force of man, however applied, has yet been able to change or deform in any particular; and which continues to give off its inward light without change throughout eternity—shall endure through endless cycles of time after the metal of the ring which holds it shall have crumbled in decay: even so shall your spirits, formerly two, now one and indissoluble, progress in ever-ascending evolution throughout eternity after the base material which is your bodies shall have returned to the senseless dust from whence it arose."

THE Karbix lowered his arms and the bridal party walked to the door through a double rank of uplifted weapons. From the chapel they were led to another room, where the contracting parties signed their names in a register. The Kofedix then brought forward two marriage certificates—heavy square plates of a brilliant purple metal, beautifully engraved in parallel columns of English and Kondalian script, and heavily bordered with precious stones. The principals and witnesses signed below each column, the signatures being deeply engraved by the royal engraver. Leaving the registry, they were escorted to the dining hall, where a truly royal repast was served. Between courses the highest nobles of the nation welcomed the visitors and wished them happiness in short but earnest addresses. After the last course had been disposed of, the Karbix rose at a sign from the Karfedix and spoke, his voice again agitated by the emotion which had puzzled his hearers during the marriage service.

"All Kondal is with us here in spirit, trying to aid us in our poor attempts to convey our welcome to these our guests, of whose friendship no greater warrant could be given than their willingness to grant us the privilege of their marriage. Not only have they given us a boon that will make their names revered throughout the nation as long as Kondal shall exist, but they have also been the means of showing us plainly that the First Cause is upon our side, that our age-old institution of honor is in truth the only foundation upon which can be built a race fitted to survive. At the same time they have been the means of showing us that our hated foe, entirely without honor, building his race upon a foundation of bloodthirsty savagery alone, is building wrongly and must perish utterly from the face of Osnome."

His hearers listened, impressed by his earnestness, but plainly not understanding his meaning.

"You do not understand?" he went on, with a deep

light shining in his eyes. "It is inevitable that two peoples inhabiting worlds so widely separated as are our two should be possessed of widely-varying knowledge and abilities, and these strangers have already made it possible for us to construct engines of destruction which shall obliterate Mardonale completely . . ." A fierce shout of joy interrupted the speaker and the nobles sprang to their feet, saluting the visitors with upraised weapons. As soon as they had reseated themselves, the Karbix continued:

"That is the boon. The vindication of our system of evolution is easily explained. The strangers landed first upon Mardonale. Had Nalboon met them in honor, he would have gained the boon. But he, with the savagery characteristic of his evolution, attempted to kill his guests and steal their treasures, with what results you already know. We, on our part, in exchange for the few and trifling services we have been able to render them, have received even more than Nalboon would have obtained, had his plans not been nullified by their vastly superior state of evolution."

The orator seated himself and there was a deafening clamor of cheering as the nobles formed themselves into an escort of honor and conducted the two couples to their apartments.

Alone in their room, Dorothy turned to her husband with tears shining in her beautiful eyes.

"Dick, sweetheart, wasn't that the most wonderful thing that anybody ever heard of? Using the word in all its real meaning, it was indescribably grand, and that old man is simply superb. It makes me ashamed of myself to think that I was ever afraid or nervous here."

"It sure was all of that, Dottie mine, little bride of an hour. The whole thing gets right down to where a fellow lives—I've got a lump in my throat right now so big that it hurts me to think. Earthly marriages are piffling in comparison with that ceremony. It's no wonder they're happy, after taking those vows—especially as they don't have to take them until after they are sure of themselves.

"But we're sure already, sweetheart," as he embraced her with all the feeling of his nature. "Those vows are not a bit stronger than the ones we have already exchanged—bodily and mentally and spiritually we are one, now and forever."

CHAPTER XVII.

Bird, Beast, or Fish?

"THESE jewels rather puzzle me, Dick. What are they?" asked Martin, as the four assembled, waiting for the first meal. As he spoke he held up his third finger, upon which gleamed the royal jewel of Osnome in its splendid Belcher mounting of arenak as transparent as the jewel itself and having the same intense blue color. "I know the name, 'faidon,' but that's all I seem to know."

"That's about all that anybody knows about them. It is a naturally-occurring, hundred-faceted crystal, just as you see it there—deep blue, perfectly transparent, intensely refractive, and constantly emitting that strong,

blue light. It is so hard that it cannot be worked, cut, or ground. No amount of the hardest known abrasive will even roughen its surface. No blow, however great, will break it—it merely forces its way into the material of the hammer, however hard the hammer may be. No extremity of either heat or cold affects it in any degree, it is the same when in the most powerful electric arc as it is when immersed in liquid helium."

"How about acids?"

"That is what I am asking myself. Osnomians aren't much force at chemistry. I'm going to try to get hold of another one, and see if I can't analyze it, just for fun. I can't seem to convince myself that a real atomic structure could be that large."

"No, it is rather large for an atom," and turning to the two girls, "How do you like your solitaires?"

"They're perfectly beautiful, and the Tiffany mounting is exquisite," replied Dorothy, enthusiastically, "but they're so awfully big! They're as big as ten-carat diamonds, I do believe."

"Just about," replied Seaton, "but at that, they're the smallest Dunark could find. They have been kicking around for years, he says—so small that nobody wanted them. They wear big ones on their bracelets, you know. You sure will make a hit in Washington, Dottie. People will think you're wearing a bottle-stopper until they see it shining in the dark, then they'll think it's an automobile headlight. But after a few jewelers have seen these stones, one of them will be offering us five million dollars apiece for them, trying to buy them for some dizzy old dame who wants to put out the eyes of some of her social rivals. Yes? No?"

"That's about right, Dick," replied Crane, and his face wore a thoughtful look. "We can't keep it secret that we have a new jewel, since all four of us will be wearing them continuously, and anyone who knows jewels at all will recognize these as infinitely superior to any known Earthly jewel. In fact, they may get some of us into trouble, as fabulously valuable jewels usually do."

"That's true, too. So we'll let it out casually that they're as common as mud up here—that we're just wearing them for sentiment, which is true, and that we're thinking of bringing back a shipload to sell for parking lights."

"That would probably keep anyone from trying to murder our wives for their rings, at least."

"Have you read your marriage certificate, Dick?" asked Margaret.

"Not yet. Let's look at it, Dottie."

She produced the massive, heavily-jeweled document, and the auburn head and the brown one were very close to each other as they read together the English side of the certificate. Their vows were there, word for word, with their own signatures beneath them, all deeply engraved into the metal. Seaton smiled as he saw the legal form engraved below their signatures, and read aloud:

"I, the Head of the Church and the Commander-in-Chief of the armed forces of Kondal, upon the planet

Osnome, certify that I have this day, in the city of Kondalek, of said nation and planet, joined in indissoluble bonds of matrimony, Richard Ballinger Seaton, Doctor of Philosophy, and Dorothy Lee Vaneman; Doctor of Music; both of the city of Washington, District of Columbia, United States of America, upon the planet Earth, in strict compliance with the marriage laws, both of Kondal and of the United States of America.

TARNAN."

Witnesses:

ROBAN, Emperor of Kondal.

TURAL, Empress of Kondal.

DUNARK, Crown Prince of Kondal.

SITAR, Crown Princess of Kondal.

MARC C. DUQUESNE, Ph. D., Washington, D. C.

"That is SOME document," remarked Seaton. "Probably a lawyer could find fault with his phraseology, but I'll bet that this thing would hold in any court in the world. Think you'll get married again when we get back, Mart?"

Both girls protested, and Crane answered:

"No, I think not. Our ceremony would be rather an anticlimax after this one, and this one will undoubtedly prove legal. I intend to register this just as it is, and get a ruling from the courts. But it is time for breakfast. Pardon me—I should have said 'darprat,' for it certainly is not breakfast-time by Washington clocks. My watch says that it is eleven-thirty P. M."

"This system of time is funny," remarked Dorothy. "I just can't get used to having no night, and . . ."

"And it's such a long time between eats, as the famous governor said about the drinks," broke in Seaton.

"How did you know what I was going to say, Dick?"

"Husbandly intuition," he grinned, "aided and abetted by a normal appetite that rebels at seventeen hours between supper and breakfast, and nine hours between the other meals. Well, it's time to eat—let's go!"

AFTER eating, the men hurried to the Skylark. During the sleeping-period the vessel had been banded with the copper repellers; the machine guns and instruments, including the wonderful Osnomian wireless system, had been installed; and, except for the power-bars, she was ready for a voyage. The Kondalian vessel was complete, even to the cushions, but was without instruments.

After a brief conversation with the officer in charge, Dunark turned to Seaton.

"Didn't you find that your springs couldn't stand up under the acceleration?"

"Yes, they flattened out dead."

"The Kolanix Felan, in charge of the work, thought so, and substituted our compound-compensated type, made of real spring metal, for them. They'll hold you through any acceleration you can live through."

"Thanks, that's fine. What's next, instruments?"

"Yes. I have sent a crew of men to gather up what copper they can find—you know that we use prac-

tically no metallic copper, as platinum, gold, and silver are so much better for ordinary purposes—and another to erect a copper-smelter near one of the mines which supply the city with the copper sulphate used upon our tables. While they are at work I think I will work on the instruments, if you two will be kind enough to help me."

Seaton and Crane offered to supply him with instruments from their reserve stock, but the Kofedix refused to accept them, saying that he would rather have their help in making them, so that he would thoroughly understand their functions. The electric furnaces were rapidly made ready and they set to work; Crane taking great delight in working that hitherto rare and very refractory metal, iridium, of which all the Kondalian instruments were to be made.

"They have a lot of our rare metals here, Dick."

"They sure have. I'd like to set up a laboratory and live here a few years—I'd learn something about my specialty or burst. They use gold and silver where we use copper, and platinum and its alloys where we use iron and soft steel. All their weapons are made of iridium, and all their most highly-tempered tools, such as their knives, razors, and so on, are made of opaque arenak. I suppose you've noticed the edge on your razor?"

"How could I help it? It is hard to realize that a metal can be so hard that it requires forty years on a diamond-dust abrasive machine to hone a razor—or that once honed, it shaves generation after generation of men without losing in any degree its keenness."

"I can't understand it, either—I only know that it's so. They have all our heavy metals in great abundance, and a lot more that we don't know anything about on Earth, but they apparently haven't any light metals at all. It must be that Osnome was thrown off the parent sun late, so that the light metals were all gone?"

"Something like that, possibly."

The extraordinary skill of the Kofedix made the manufacture of the instruments a short task, and after Crane had replaced the few broken instruments of the Skylark from their reserve stock, they turned their attention to the supply of copper that had been gathered. They found it enough for only two bars.

"Is this all we have?" asked Dunark, sharply.

"It is, your Highness," replied the Kolanix. "That is every scrap of metallic copper in the city."

"Oh, well, that'll be enough to last until we can smelt the rest," said Seaton. "With one bar apiece we're ready for anything Mardonale can start. Let 'em come!"

The bars were placed in the containers and both vessels were tried out, each making a perfect performance. Upon the following kokam, immediately after the first meal, the full party from the Earth boarded the Skylark and accompanied the Kofedix to the copper smelter. Dunark himself directed the work of preparing the charges and the molds, though he was continually being interrupted by wireless messages in code and by messengers bearing tidings too important to trust into the air.

"I hope you will excuse all of these delays," said

Dunark, after the twentieth interruption, "but . . ."

"That's all right, Dunark. We know that you're a busy man."

"I can tell you about it, but I wouldn't want to tell many people. With the salt you gave us, I am preparing a power-plant that will enable us to blow Mardonale into . . ."

He broke off as a wireless call for help sounded. All listened intently, learning that a freight-plane was being pursued by a karlon a few hundred miles away.

"Now's the time for you to study one, Dunark!" Seaton exclaimed. "Get your gang of scientists out here while we go get him and drag him in!"

AS Dunark sent the message, the Skylark's people hurried aboard, and Seaton drove the vessel toward the calls for help. With its great speed it reached the monster before the plane was overtaken. Focusing the attractor upon the enormous metallic beak of the karlon, Seaton threw on the power and the beast halted in midair as it was jerked backward and upward. As it saw the puny size of the attacking Skylark, it opened its cavernous mouth in a horrible roar and rushed at full speed. Seaton, unwilling to have the repellers stripped from the vessel, turned on the current actuating them. The karlon was hurled backward to the point of equilibrium of the two forces, where it struggled demoniacally.

Seaton carried his captive back to the smelter, where finally, by judicious pushing and pulling, he succeeded in turning the monster flat upon its back and pinning it to the ground in spite of its struggles to escape.

Soon the scientists arrived and studied the animal thoroughly, at as close a range as its flailing arms permitted.

"I wish we could kill him without blowing him to bits," wirelessed Dunark. "Do you know any way of doing it?"

"We could if we had a few barrels of ether, or some of our own poison gases, but they are all unknown here and it would take a long time to build the apparatus to make them. I'll see if I can't tire him out and get him that way as soon as you've studied him enough. We may be able to find out where he lives, too."

The scientists having finished their observations, Seaton jerked the animal a few miles into the air and shut off the forces acting upon it. There was a sudden crash, and the karlon, knowing that this apparently insignificant vessel was its master, turned in headlong flight.

"Have you any idea what caused the noise just then, Dick?" asked Crane; who, with characteristic imperturbability, had taken out his notebook and was making exact notes of all that transpired.

"I imagine we cracked a few of his plates," replied Seaton with a laugh, as he held the Skylark in place a few hundred feet above the fleeing animal.

Pitted for the first time in its life against an antagonist, who could both outfly and outfight it, the karlon redoubled its efforts and fled in a panic of fear. It flew back over the city of Kondalek, over the outlying country, and out over the ocean, still followed easily

by the Skylark. As they neared the Mardonalian border, a fleet of warships rose to contest the entry of the monster. Seaton, not wishing to let the foe see the rejuvenated Skylark, jerked his captive high into the thin air. As soon as it was released, it headed for the ocean in an almost perpendicular dive, while Seaton focused an object-compass upon it.

"Go to it, old top," he addressed the plunging monster. "We'll follow you clear to the bottom of the ocean if you go that far!"

There was a mighty double splash as the karlon struck the water, closely followed by the Skylark. The girls gasped as the vessel plunged below the surface at such terrific speed, and seemed surprised that it had suffered no injury and that they had felt no jar. Seaton turned on the powerful searchlights and kept close enough so that he could see the monster through the transparent walls. Deeper and deeper the quarry dove, until it was plainly evident to the pursuers that it was just as much at home in the water as it was in the air. The beams of the lights revealed strange forms of life, among which were huge, staring-eyed fishes, which floundered about blindly in the unaccustomed glare. As the karlon bored still deeper, the living things became scarcer, but still occasional fleeting glimpses were obtained of the living nightmares which inhabited the oppressive depths of these strange seas. Continuing downward, the karlon plumbed the nethermost pit of the ocean and came to rest upon the bottom, stirring up a murk of ooze.

"How deep are we, Mart?"

"About four miles. I have read the pressure, but will have to calculate later exactly what depth it represents, from the gravity and density readings."

As the animal showed no sign of leaving its retreat, Seaton pulled it out with the attractor and it broke for the surface. Rising through the water at full speed, it burst into the air and soared upward to such an incredible height that Seaton was amazed.

"I wouldn't have believed that anything could fly in air this thin!" he exclaimed.

"It is thin up here," assented Crane. "Less than three pounds to the square inch. I wonder how he does it?"

"It doesn't look as though we are ever going to find out—he's sure a bear-cat!" replied Seaton, as the karlon, unable to ascend further, dropped in a slanting dive toward the lowlands of Kondal—the terrible, swampy region covered with poisonous vegetation and inhabited by frightful animals and even more frightful savages. The monster neared the ground with ever-increasing speed. Seaton, keeping close behind it, remarked to Crane:

"He'll have to flatten out pretty quick, or he'll burst something, sure."

BUT it did not flatten out. It struck the soft ground head foremost and disappeared, its tentacles apparently boring a way ahead of it.

Astonished at such an unlooked-for development, Seaton brought the Skylark to a stop and stabbed into the ground with the attractor. The first attempt

brought up nothing but a pillar of muck, the second brought to light a couple of wings and one writhing arm, the third brought the whole animal, still struggling as strongly as it had in the first contest. Seaton again lifted the animal high into the air.

"If he does that again, we'll follow him."

"Will the ship stand it?" asked DuQuesné, with interest.

"Yes. The old bus wouldn't have, but this one can stand anything. We can go anywhere that thing can, that's a cinch. If we have enough power on, we probably won't even feel a jolt when we strike ground."

Seaton reduced the force acting upon the animal until just enough was left to keep the attractor upon it, and it again dived into the swamp. The Skylark followed, feeling its way in the total darkness, until the animal stopped, refusing to move in any direction, at a depth estimated by Crane to be about three-quarters of a mile. After waiting some time Seaton increased the power of the attractor and tore the karlon back to the surface and into the air, where it turned on the Skylark with redoubled fury.

"We've dug him out of his last refuge and he's fighting like a cornered rat," said Seaton as he repelled the monster to a safe distance. "He's apparently as fresh as when he started, in spite of all this playing. Talk about a game fish! He doesn't intend to run any more, though, so I guess we'll have to put him away. It's a shame to bump him off, but it's got to be done."

Crane aimed one of the heavy X-plosive bullets at the savagely-struggling monster, and the earth rocked with the concussion as the shell struck its mark. They hurried back to the smelter, where Dunark asked eagerly:

"What did you find out about it?"

"Nothing much," replied Seaton, and in a few words described the actions of the karlon. "What did your savants think of it?"

"Very little that any of us can understand in terms of any other known organism. It seems to combine all the characteristics of bird, beast, and fish, and to have within itself the possibilities of both bisexual and asexual reproduction."

"I wouldn't doubt it—it's a queer one, all right."

The copper bars were cool enough to handle, and the Skylark was loaded with five times its original supply of copper, the other vessel taking on a much smaller amount. After the Kofedix had directed the officer in charge to place the remaining bars in easily-accessible places throughout the nation, the two vessels were piloted back to the palace, arriving just in time for the last meal of the kokam.

"Well, Dunark," said Seaton after the meal was over, "I'm afraid that we must go back as soon as we can. Dorothy's parents and Martin's bankers will think they are dead by this time. We should start right now, but . . ."

"Oh, no, you must not do that. That would rob our people of the chance of bidding you goodbye."

"There's another reason, too. I have a mighty big favor to ask of you."

"It is granted. If man can do it, consider it done."

"Well, you know platinum is a very scarce and highly useful metal with us. I wonder if you could let us have a few tons of it? And I would like to have another faidon, too—I want to see if I can't analyze it."

"You have given us a thousand times the value of all the platinum and all the jewels your vessel can carry. As soon as the foundries are open tomorrow we will go and load up your store-rooms—or, if you wish, we will do it now."

"That isn't necessary. We may as well enjoy your hospitality for one more sleeping-period, get the platinum during the first work-period, and bid you goodbye just before the second meal. How would that be?"

"Perfectly satisfactory."

The following kokam, Dunark piloted the Skylark, with Seaton, Crane, and DuQuesné as crew, to one of the great platinum foundries. The girls remained behind to get ready for their departure, and for the great ceremony which was to precede it. The trip to the foundry was a short one, and the three scientists of Earth stared at what they saw—thousands of tons of platinum, cast into bars and piled up like pig-iron, waiting to be made into numerous articles of every-day use throughout the nation. Dunark wrote out an order, which his chief attendant handed to the officer in charge of the foundry, saying:

"Please have it loaded at once."

Seaton indicated the storage compartment into which the metal was to be carried, and a procession of slaves, two men staggering under one ingot, was soon formed between the pile and the storage room.

"**H**OW much are you loading on, Dunark?" asked Seaton, when the large compartment was more than half full.

"My order called for about twenty tons, in your weight, but I changed it later—we may as well fill that room full, so that the metal will not rattle around in flight. It doesn't make any difference to us, we have so much of it. It is like your gift of the salt, only vastly smaller."

"What are you going to do with it all, Dick?" asked Crane. "That is enough to break the platinum market completely."

"That's exactly what I'm going to do," returned Seaton, with a gleam in his gray eyes. "I'm going to burst this unjustifiable fad for platinum jewelry so wide open that it'll never recover, and make platinum again available for its proper uses, in laboratories and in the industries."

"You know yourself," he rushed on hotly, "that the only reason platinum is used at all for jewelry is that it is expensive. It isn't nearly so handsome as either gold or silver, and if it wasn't the most costly common metal we have, the jewelry-wearing crowd wouldn't touch it with a ten-foot pole. Useless as an ornament, it is the one absolutely indispensable laboratory metal, and literally hundreds of laboratories that need it can't have it because over half the world's supply is tied up in jeweler's windows and in useless baubles. Then, too, it is the best thing known for contact points in

electrical machinery. When the Government and all the scientific societies were abjectly begging the jewelers to let loose a little of it they refused—they were selling it to profiteering spendthrifts at a hundred and fifty dollars an ounce. The condition isn't much better right now; it's a vicious circle. As long as the price stays high it will be used for jewelry, and as long as it is used for jewelry the price will stay high, and scientists will have to fight the jewelers for what little they get."

"While somewhat exaggerated, that is about the way matters stand. I will admit that I, too, am rather bitter on the subject," said Crane.

"Bitter? Of course you're bitter. Everybody is who knows anything about science and who has a brain in his head. Anybody who claims to be a scientist and yet stands for any of his folks buying platinum jewelry ought to be shot. But they'll get theirs as soon as we get back. They wouldn't let go of it before, they had too good a thing, but they'll let go now, and get their fingers burned besides. I'm going to dump this whole shipment at fifty cents a pound, and we'll take mighty good care that jewelers don't corner the supply."

"I'm with you, Dick, as usual."

Soon the storage room was filled to the ceiling with closely-stacked ingots of the precious metal, and the Skylark was driven back to the landing dock. She alighted beside Dunark's vessel, the *Kondal*, whose gorgeously-decorated crew of high officers sprang to attention as the four men stepped out. All were dressed for the ceremonial leave-taking, the three Americans wearing their spotless white, the Kondalians wearing their most resplendent trappings.

"This formal stuff sure does pull my cork!" exclaimed Seaton to Dunark. "I want to get this straight. The arrangement was that we were to be here at this time, all dressed up, and wait for the ladies, who are coming under the escort of your people?"

"Yes. Our family is to escort the ladies from the palace here. As they leave the elevator the surrounding war-vessels will salute, and after a brief ceremony you two will escort your wives into the Skylark, Doctor DuQuesne standing a little apart and following you in. The war-vessels will escort you as high as they can go, and the *Kondal* will accompany you as far as our most distant sun before turning back."

For a few moments Seaton nervously paced a short beat in front of the door of the space-car.

"I'm getting more fussed every second," he said abruptly, taking out his wireless instrument. "I'm going to see if they aren't about ready."

"What seems to be the trouble, Dick? Have you another hunch, or are you just rattled?" asked Crane.

"Rattled, I guess, but I sure do want to get going," he replied, as he worked the lever rapidly.

"Dottie," he sent out, and, the call being answered, "How long will you be? We're all ready and waiting, chewing our finger-nails with impatience."

"We'll soon be ready. The *Karfedix* is coming for us now."

Scarcely had the tiny sounder become silent when the air was shaken by an urgently-vibrated message, and every wireless sounder gave warning.

CHAPTER XVIII

The Invasion

THE pulsating air and the chattering sounders were giving the same dire warning, the alarm extraordinary of invasion, of imminent and catastrophic danger from the air.

"Don't try to reach the palace. Everyone on the ground will have time enough to hide in the deep, arenak-protected pits beneath the buildings, and you would be killed by the invaders long before you could reach the palace. If we can repel the enemy and keep them from landing, the women will be perfectly safe, even though the whole city is destroyed. If they effect a landing we are lost."

"They'll not land, then," Seaton answered grimly, as he sprang into the Skylark and took his place at the board. As Crane took out his wireless, Seaton cautioned him.

"Send in English, and tell the girls not to answer, as these devils can locate the calls within a foot and will be able to attack the right spot. Just tell them we're safe in the Skylark. Tell them to sit tight while we wipe out this gang that is coming, and that we'll call them, once in a while, when we have time, during the battle."

Before Crane had finished sending the message the crescendo whine of enormous propellers was heard. Simultaneously there was a deafening concussion and one entire wing of the palace disappeared in a cloud of dust, in the midst of which could be discerned a few flying fragments. The air was filled with Mardonian warships. They were huge vessels, each mounting hundreds of guns, and the rain of high-explosive shells was rapidly reducing the great city to a wide-spread heap of debris.

Seaton's hand was upon the lever which would hurl the Skylark upward into the fray. Crane and DuQuesne, each hard of eye and grim of jaw, were stationed at their machine-guns.

"Something's up!" exclaimed Seaton, "Look at the *Kondal*!"

Something had happened indeed. Dunark sat at the board, his hand upon the power lever, and each of his crew was in place, grasping his weapon, but every man was writhing in agony, unable to control his movements. As they stared, momentarily spellbound, the entire crew ceased their agonized struggles and hung, apparently lifeless, from their supports.

"They've got to 'em some way—let's go!" yelled Seaton.

As his hand tightened upon the lever, a succession of shells burst upon the dock, wrecking it completely. All three men fancied that the world had come to an end as the stream of high explosive was directed against their vessel. But the four-foot shell of arenak was impregnable, and Seaton shot the Skylark upward into the midst of the enemy fleet. The two gunners fired as fast as they could sight their weapons, and with each shot one of the great warships was blown into fragments. The Mardonians then concentrated the fire of their entire fleet upon their tiny opponent.

From every point of the compass, from above and below, the enemy gunners directed streams of shells against the dodging vessel. The noise was more than deafening, it was one continuous, shattering explosion, and the Earth-men were surrounded by such a blaze of fire from the exploding shells that they could not see the enemy vessels. Seaton sought to dodge the shells by a long dive toward one side, only to find that dozens of new opponents had been launched against them—the deadly airplane-torpedoes of Osnome. Steered by wireless and carrying no crews, they were simply winged bombs carrying thousands of pounds of terrific electrical explosive—enough to kill the men inside the vessel by the concussion of the explosion, even should the arenak armor be strong enough to withstand the blow. Though much faster than the Osnomian vessels, they were slow beside the Skylark, and Seaton could have dodged a few of them with ease. As he dodged, however, they followed relentlessly, and in spite of those which were blown up by the gunners, their number constantly increased until Seaton thought of the repellers.

"'Nobody Holme' is right!" he exclaimed, as he threw on the power actuating the copper bands which encircled the hull in all directions. Instantly the torpedoes were hurled backward, exploding as the force struck them, and even the shells were ineffective, exploding harmlessly, as they encountered the zone of force. The noise of the awful detonations lessened markedly.

"Why the silence, I wonder?" asked Seaton, while the futile shells of the enemy continued to waste their force some hundreds of feet distant from their goal, and while Crane and DuQuesne were methodically destroying the huge vessels as fast as they could aim and fire. At every report one of the monster warships disappeared—its shattered fragments and the bodies of its crew hurtling to the ground. His voice could not be heard in even the lessened tumult, but he continued:

"It must be that our repellers have set up a partial vacuum by repelling even the air!"

SUDDENLY the shelling ceased and the Skylark was enveloped by a blinding glare from hundreds of great reflectors; an intense, searching, bluish-violet light that burned the flesh and seared through eyelids and eyeballs into the very brain.

"Ultra-violet!" yelled Seaton at the first glimpse of the light, as he threw on the power. "Shut your eyes! Turn your heads down!"

Out in space, far beyond reach of the deadly rays, the men held a short conference, then donned heavy leather-and-canvas suits, which they smeared liberally with thick red paint, and replaced the plain glasses of their helmets with heavy lenses of deep ruby glass.

"This'll stop any ultra-violet ray ever produced," exulted Seaton, as he again threw the vessel into the Mardonian fleet. A score of the great vessels met their fate before the Skylark was located, and, although the terrible rays were again focused upon the intruder in all their intensity, the carnage continued.

In a few minutes, however, the men heard, or rather

felt, a low, intense vibration, like a silent wave of sound—a vibration which smote upon the eardrums as no possible sound could smite, a vibration which racked the joints and tortured the nerves as though the whole body were disintegrating. So sudden and terrible was the effect that Seaton uttered an involuntary yelp of surprise and pain as he once more fled into the safety of space.

"What the devil was that?" demanded DuQuesne. "Was it infra-sound? I didn't suppose such waves could be produced."

"Infra-sound is right. They produce most anything here," replied Seaton, and Crane added:

"Well, about three fur suits apiece, with cotton in our ears, ought to kill any wave propagated through air."

The fur suits were donned forthwith, Seaton whispering in Crane's ear:

"I've found out something else, too. The repellers repel even the air. I'm going to shoot enough juice through them to set up a perfect vacuum outside. That'll kill those air-waves."

Scarcely were they back within range of the fleet when DuQuesne, reaching for his gun to fire the first shot, leaped backward with a yell.

"Beat it!"

Once more at a safe distance, DuQuesne explained.

"It's lucky I'm so used to handling hot stuff that from force of habit I never make close contact with anything at the first touch. That gun carried thousands of volts, with lots of amperage behind them, and if I had had a good hold on it I couldn't have let go. We'll block that game quick enough, though. Thick, dry gloves covered with rubber are all that is necessary. It's a good thing for all of us that you have those fancy condensite handles on your levers, Seaton."

"That was how they got Dunark, undoubtedly," said Crane, as he sent a brief message to the girls, assuring them that all was well, as he had been doing at every respite. "But why were we not overcome at the same time?"

"They must have had the current tuned to iridium, and had to experiment until they found the right wave for steel," Seaton explained.

"I should think our bar would have exploded, with all that current. They must have hit the copper range, too?"

Seaton frowned in thought before he answered.

"Maybe because it's induced current, and not a steady battery impulse. Anyway, it didn't. Let's go!"

"Just a minute," put in Crane. "What are they going to do next, Dick?"

"Search me. I'm not used to my new Osnomian mind yet. I recognize things all right after they happen, but I can't seem to figure ahead—it's like a dimly-remembered something that flashes up as soon as mentioned. I get too many and too new ideas at once. I know, though, that the Osnomians have defenses against all these things except this last stunt of the charged guns. That must be the new one that Mardonale stole from Kondal. The defenses are, however, purely Osnomian in character and material. As we haven't got

the stuff to set them up as the Osnomians do, we'll have to do it our own way. We may be able to dope out the next one, though. Let's see, what have they given us so far?"

"We've got to hand it to them," responded DuQuesne, admiringly. "They're giving us the whole range of wave-lengths, one at a time. They've given us light, both ultra-violet and visible, sound, infra-sound, and electricity—I don't know what's left unless they give us a new kind of X-rays, or Hertzian, or infra-red heat waves, or . . ."

"That's it, heat!" exclaimed Seaton. They produce heat by means of powerful wave-generators and by setting up heavy induced currents in the armor. They can melt arenak that way."

"Do you suppose we can handle the heat with our refrigerators?" asked Crane.

"Probably. We have a lot of power, and the new arenak cylinders of our compressors will stand anything. The only trouble will be in cooling the condensers. We'll run as long as we have any water in our tanks, then go dive into the ocean to cool off. We'll try it a whirl, anyway."

SOON the Skylark was again dealing out death and destruction in the thick of the enemy vessels, who again turned from the devastation of the helpless city to destroy this troublesome antagonist. But in spite of the utmost efforts of light-waves, sound-waves, and high-tension electricity, the space-car continued to take its terrible toll. As Seaton had foretold, the armor of the Skylark began to grow hot, and he turned on the full power of the refrigerating system. In spite of the cooling apparatus, however, the outer walls finally began to glow redly, and, although the interior was comfortably cool, the ends of the rifle-barrels, which were set flush with the surface of the revolving arenak globes which held them, softened, rendering the guns useless. The copper repellers melted and dripped off in flaming balls of molten metal, so that shells once more began to crash against the armor. DuQuesne, with no thought of quitting apparent in voice or manner, said calmly:

"Well, it looks as though they had us stopped for a few minutes. Let's go back into space and dope out something else."

Seaton, thinking intensely, saw a vast fleet of enemy reinforcements approaching, and at the same time received a wireless call directed to Dunark. It was from the grand fleet of Kondal, hastening from the bordering ocean to the defense of the city. Using Dunark's private code, Seaton told the Karbix, who was in charge of the fleet, that the enemy had a new invention which would wipe them out utterly without a chance to fight, and that he and his vessel were in control of the situation; and ordered him to see that no Kondalian ship came within battle range of a Mardonian. He then turned to Crane and DuQuesne, his face grim and his fighting jaw set.

"I've got it doped right now. Give the Lark speed enough and she's some bullet herself. We've got four feet of arenak, they've got only an inch, and arenak

doesn't even begin to soften until far above a blinding white temperature. Strap yourselves in solid, for it's going to be a rough party from now on."

They buckled their belts firmly, and Seaton, holding the bar toward their nearest antagonist, applied twenty notches of power. The Skylark darted forward and crashed completely through the great airship. Torn wide open by the forty-foot projectile, its engines wrecked and its helicopter-screws and propellers completely disabled, the helpless hulk plunged through two miles of empty air, a mass of wreckage.

Darting hither and thither, the space-car tore through vessel after vessel of the Mardonian fleet. She was an embodied thunderbolt; a huge, irresistible, indestructible projectile, directed by a keen brain inside it—the brain of Richard Seaton, roused to his highest fighting pitch and fighting for everything that man holds dear. Tortured by the terrible silent waves, which, now that the protecting vacuum had been destroyed, were only partially stopped by the fur suits; shaken and battered by the terrific impacts and the even greater shocks occurring every second as the direction of the vessel was changed; made sick and dizzy by the nauseating swings and lurches as the Skylark spun about the central chamber; Seaton's wonderful physique and his nerves of steel stood him in good stead in this, the supreme battle of his life, as with teeth tight-locked and eyes gray and hard as the fracture of high-carbon steel, he urged the Skylark on to greater and greater efforts.

Though it was impossible for the eye to follow the flight of the space-car, the mechanical sighting devices of the Mardonian vessels kept her in as perfect focus as though she were stationary, and the great generators continued to hurl into her the full power of their death-dealing waves. The enemy guns were still spitting forth their streams of high-explosive shells, but unlike the waves, the shells moved so slowly compared to their target that only a few found their mark, and many of the vessels fell to the ground, riddled by the shells of their sister-ships.

WITH anxious eyes Seaton watched the hull of his animated cannon-ball change in color. From dull red it became cherry, and as the cherry red gave place to bright red heat, Seaton threw even more power into the bar as he muttered through his set teeth:

"Well, Seaton, old top, you've got to cut out this loafing on the job and get busy!"

In spite of his utmost exertions and in spite of the powerful ammonia plant, now exerting its full capacity, but sadly handicapped by the fact that its cooling-water was now boiling, Seaton saw the arenak shell continue to heat. The bright red was succeeded by orange, which slowly changed, first to yellow, then to light yellow, and finally to a dazzling white; through which, with the aid of his heavy red lenses, he could still see the enemy ships. After a time he noted that the color had gone down to yellow and he thrilled with exultation, knowing that he had so reduced the numbers of the enemy fleet that their wave-generators could no longer overcome his refrigerators. After a few minutes more of the awful carnage there remained only a

small fraction of the proud fleet which, thousands strong, had invaded Kondal—a remnant that sought safety in flight. But even in flight, they still fought with all their weapons, and the streams of bombs dropped from their keel-batteries upon the country beneath marked the path of their retreat with a wide swath of destruction. Half inclined to let the few remaining vessels escape, Seaton's mind changed instantly as he saw the bombs spreading devastation upon the countryside, and not until the last of the Mardonian vessels had been destroyed did he drop the Skylark into the area of ruins which had once been the palace grounds, beside the Kondal, which was still lying as it had fallen.

After several attempts to steady their whirling senses, the three men finally were able to walk, and, opening a door, they leaped out through the opening in the still glowing wall. Seaton's first act was to wireless the news to Dorothy, who replied that they were coming as fast as they could. The men then removed their helmets, revealing faces pale and drawn, and turned to the helpless space-car.

"There's no way of getting into this thing from the outside . . ." Seaton began, when he saw that the Karfedix and his party were beginning to revive. Soon Dunark opened the door and stumbled out.

"I have to thank you for more than my life this time," he said, his voice shaken by uncontrollable emotion as he grasped the hands of all three men. "Though unable to move, I was conscious and saw all that happened—you kept them so busy that they didn't have a chance to give us enough to kill us outright. You have saved the lives of millions of our nation and have saved Kondal itself from annihilation."

"Oh, it's not that bad," answered Seaton, uncomfortably. "Both nations have been invaded before."

"Yes—once when we developed the ultra-violet ray, once when Mardonale perfected the machine for producing the silent sound-wave, and again when we harnessed the heat-wave. But this would have been the most complete disaster in history. The other inventions were not so deadly as was this one, and there were terrible battles, from which the victors emerged so crippled that they could not completely exterminate the vanquished, who were able to re-establish themselves in the course of time. If it had not been for you, this would have been the end, as not a Kondalian soldier could move—any person touching iridium was helpless and would have been killed."

He ceased speaking and saluted as the Karfedix and his party rounded a heap of boulders. Dorothy and Margaret screamed in unison as they saw the haggard faces of their husbands, and saw their suits, dripping with a thick substance which they knew to be red, in spite of its purplish-black color. Seaton dodged nimbly as Dorothy sought to take him in her arms, and tore off his suit.

"Nothing but red paint to stop their light-rays," he reassured her as he lifted her clear from the ground in a soul-satisfying embrace. Out of the corner of his eye he saw the Kondalians staring in open-mouthed amazement at the Skylark. Wheeling swiftly, he

laughed as he saw a gigantic ball of frost and snow! Again donning his fur suit, he shut off the refrigerators and returned to his party, where the Karfedix gave him thanks in measured terms. As he fell silent, Dunark added:

"Thanks to you, the Mardonian forces, instead of wiping us out, are themselves destroyed, while only a handful of our vessels have been lost, since the grand fleet could not arrive until the battle was over, and since the vessels that would have thrown themselves away were saved by your orders, which I heard. Thanks to you, we are not even crippled, though our capital is destroyed and the lives of some unfortunates, who could not reach the pits in time, have probably been lost.

"Thanks to you," he continued in a ringing voice, "and to the salt and the new source of power you have given us, Mardonale shall now be destroyed utterly!"

After sending out ships to relieve the suffering of the few wounded and the many homeless, Dunark summoned a corps of mechanics, who banded on new repellers and repaired the fused barrels of the machine-guns, all that was necessary to restore the Skylark to perfect condition.

FACING the party from Earth, the Karfedix stood in the ruins of his magnificent palace. Back of him were the nobles of Kondal, and still further back, in order of rank, stood a multitude of people.

"Is it permitted, oh noble Karfedo, that I reward your captive for his share in the victory?" he asked.

"It is," acquiesced Seaton and Crane, and Roban stepped up to DuQuesne and placed in his hand a weighty leather bag. He then fastened about his left wrist the Order of Kondal, the highest order of the nation.

He then clasped about Crane's wrist a heavily-jeweled, peculiarly-ornamented disk wrought of a deep ruby-red metal, supported by a heavy bracelet of the same material, the most precious metal of Osnome. At sight of the disk the nobles saluted and Seaton barely concealed a start of surprise, for it bore the royal emblem and delegated to its bearer power second only to that of the Karfedix himself.

"I bestow upon you this symbol, Karfedix Crane, in recognition of what you have this day done for Kondal. Wherever you may be upon Kondalian Osnome, which from this day henceforth shall be all Osnome, you have power as my personal representative, as my eldest son."

He drew forth a second bracelet, similar to the first except that it bore seven disks, each differently designed, which he snapped upon Seaton's wrist as the nobles knelt and the people back of them threw themselves upon their faces.

"No language spoken by man possesses words sufficiently weighty to express our indebtedness to you, Karfedix Seaton, our guest and our savior. The First Cause has willed that you should be the instrument through which Kondal is this day made supreme upon Osnome.

In small and partial recognition of that instrumentality, I bestow upon you these symbols, which proclaim

you our overlord, the ultimate authority of Osnome.

"While this is not the way in which I had thought to bid you farewell, the obligations which you have heaped upon us render all smaller things insignificant. When you return, as I hope and trust you soon will, the city shall be built anew and we can welcome you as befits your station."

Lifting both arms above his head he continued:

"May the great First Cause smile upon you in all your endeavors until you solve the Mystery: may your descendants soon reach the Ultimate Goal. Goodbye."

Seaton uttered a few heartfelt words in response and the party stepped backward toward the Skylark. As they reached the vessel the standing Karfedix and the ranks of kneeling nobles snapped into the double salute—truly a rare demonstration in Kondal.

"What'll we do now?" whispered Seaton.

"Bow, of course," answered Dorothy.

They bowed, deeply and slowly, and entered their vessel. As the Skylark shot into the air with the greatest acceleration that would permit its passengers to move about, the grand fleet of Kondalian warship fired a deafening salute.

IT had been planned before the start that each person was to work sixteen hours out of the twenty-four. Seaton was to drive the vessel during the first two eight-hour periods of each day. Crane was to observe the stars during the second and to drive during the third. DuQuesne was to act as observer during the first and third periods. Margaret had volunteered to assist the observer in taking his notes during her waking hours, and Dorothy appointed herself cook and household manager.

As soon as the Skylark had left Osnome, Crane told DuQuesne that he and his wife would work in the observation room until four o'clock in the afternoon, at which time the prearranged system of relief would begin, and DuQuesne retired to his room.

Crane and Margaret made their way to the darkened room which housed the instruments and seated themselves, watching intently and making no effort to conceal their emotion as first the persons beneath them, then the giant war-vessels, and finally the ruined city itself, were lost to view. Osnome slowly assumed the proportions of a large moon, grew smaller, and as it disappeared Crane began to take notes. For a few hours the seventeen suns of this strange solar system shone upon the flying space-car; after which they assumed the aspect of a widely-separated cluster of enormous stars, slowly growing smaller and smaller and shrinking closer and closer together.

At four o'clock in the afternoon, Washington time, DuQuesne relieved Crane, who made his way to the engine room.

"It is time to change shifts, Dick. You have not had your sixteen hours, but everything will be regular from now on. You two had better get some rest."

"All right," replied Seaton, as he relinquished the controls to Crane, and after bidding the new helmsman goodnight he and Dorothy went below to their cabin.

Standing at a window with their arms around each

other they stared down with misty eyes at the very faint green star, which was rapidly decreasing in brilliance as the Skylark increased its already inconceivable velocity. Finally, as it disappeared altogether, Seaton turned to his wife and tenderly, lovingly, took her in his arms.

"Littlest Girl. . . . Sweetheart. . . ." he whispered, and paused, overcome by the intensity of his feelings.

"I know, husband mine," she answered, while tears dimmed her glorious eyes. "It is too deep. With nothing but words, we can't say a single thing."

CHAPTER XIX

The Return to Earth

DUQUESNE'S first act upon gaining the privacy of his own cabin was to open the leather bag presented to him by the Karfedix. He expected to find it filled with rare metals, with perhaps some jewels, instead of which the only metal present was a heavily-insulated tube containing a full pound of metallic radium. The least valuable items in the bag were scores of diamonds, rubies, and emeralds of enormous size and of flawless perfection. Merely ornamental glass upon Osnome, Dunark knew that they were priceless upon Earth, and had acted accordingly. To this great wealth of known gems, he had added a rich and varied assortment of the rare and strange jewels peculiar to his own world, the faidon alone being omitted from the collection. DuQuesne's habitual calmness of mind almost deserted him as he classified the contents of the bag.

The radium alone was worth millions of dollars, and the scientist in him exulted that at last his brother scientists should have ample supplies of that priceless metal with which to work, even while he was rejoicing in the price he would exact for it. He took out the familiar jewels, estimating their value as he counted them—a staggering total. The bag was still half full of the strange gems, some of them glowing like miniature lamps in the dark depths, and he made no effort to appraise them. He knew that once any competent jeweler had compared their cold, hard, scintillating beauty with that of any Earthly gems, he could demand his own price.

"At last," he breathed to himself, "I will be what I have always longed to be—a money power. Now I can cut loose from that gang of crooks and go my own way."

He replaced the gems and the tube of radium in the bag, which he stowed away in one of his capacious pockets, and made his way to the galley.

THE return voyage through space was uneventful, the Skylark constantly maintaining the same velocity with which she had started out. Several times, as the days wore on, she came within the zone of attraction of various gigantic suns, but the pilot had learned his lesson. He kept a vigilant eye upon the bar, and at the first sign of a deviation from the perpendicular he steered away, far from the source of the attraction. Not content with these precautions, the man at the

board would, from time to time, shut off the power, to make sure that the space-car was not falling toward a body directly in its line of flight.

When half the distance had been covered, the bar was reversed, the travelers holding an impromptu ceremony as the great vessel spun around its center through an angle of one hundred and eighty degrees. A few days later the observers began to recognize some of the fixed stars in familiar constellations and knew that the yellowish-white star directly in their line of flight was the sun of their own solar system. After a time they saw that their course, instead of being directly toward that rapidly-brightening star, was bearing upon a barely visible star a little to one side of it. Pointing their most powerful telescope toward that point of light, Crane made out a planet, half of its disk shining brightly. The girls hastened to peer through the telescope, and they grew excited as they made out the familiar outlines of the continents and oceans upon the lighted portion of the disk.

It was not long until these outlines were plainly visible to the unaided vision. The Earth appeared as a great, softly shining, greenish half-moon, with parts of its surface obscured by fleecy wisps of cloud, and with its two gleaming ice-caps making of its poles two brilliant areas of white. The returning wanderers stared at their own world with their hearts in their throats as Crane, who was at the board, increased the retarding force sufficiently to assure himself that they would not be traveling too fast to land upon the Earth.

After Dorothy and Margaret had gone to prepare a meal, DuQuesne turned to Seaton.

"Have you gentlemen decided what you intend to do with me?"

"No. We haven't discussed it yet. I can't make up my own mind what I want to do to you, except that I sure would like to get you inside a square ring with four-ounce gloves on. You have been of too much real assistance on this trip for us to see you hanged, as you deserve. On the other hand, you are altogether too much of a thorough-going scoundrel for us to let you go free. You see the fix we are in. What would you suggest?"

"Nothing," replied DuQuesne calmly. "As I am in no danger whatever of hanging, nothing you can say on that score affects me in the least. As for freeing me, you may do as you please—it makes no difference to me, one way or the other, as no jail can hold me for a day. I can say, however, that while I have made a fortune on this trip, so that I do not have to associate further with Steel unless it is to my interest to do so, I may nevertheless find it desirable at some future time to establish a monopoly of X. That would, of course, necessitate the death of yourself and Crane. In that event, or in case any other difference should arise between us, this whole affair will be as though it had never existed. It will have no weight either way, whether or not you try to hang me."

"Go as far as you like," Seaton answered cheerfully. "If we're not a match for you and your gang, on foot or in the air, in body or in mind, we'll deserve whatever we get. We can outrun you, outjump you, throw

you down, or lick you; we can run faster, hit harder, dive deeper, and come up dryer, than you can. We'll play any game you want to deal, whenever you want to deal it; for fun, money, chalk, or marbles."

His brow darkened in anger as a thought struck him, and the steady gray eyes bored into the unflinching black ones as he continued, with no trace of his former levity in his voice:

"But listen to this. Anything goes as far as Martin and I personally are concerned. But I want you to know that I could be arrested for what I think of you as a man; and if any of your little schemes touch Dot-tie or Peggy in any way, shape or form, I'll kill you as I would a snake—or rather, I'll take you apart as I would any other piece of scientific apparatus. This isn't a threat, it's a promise. Get me?"

"Perfectly. Good-night."

For many hours the Earth had been obscured by clouds, so that the pilot had only a general idea of what part of the world was beneath them, but as they dropped rapidly downward into the twilight zone, the clouds parted and they saw that they were directly over the Panama Canal. Seaton allowed the Skylark to fall to within ten miles of the ground, when he stopped so that Martin could get his bearings and calculate the course to Washington, which would be in total darkness before their arrival.

DuQuesne had retired, cold and reticent as usual. Glancing quickly about his cabin to make sure that he had overlooked nothing he could take with him, he opened a locker, exposing to view four suits which he had made in his spare time, each adapted to a particular method of escape from the Skylark. The one he selected was of heavy canvas, braced with steel netting, equipped with helmet and air-tanks, and attached to a strong, heavy parachute. He put it on, tested all its parts, and made his way unobserved to one of the doors in the lower part of the vessel. Thus, when the chance for escape came, he was ready for it. As the Skylark paused over the Isthmus, his lips parted in a sardonic smile. He opened the door and stepped out into the air, closing the door behind him as he fell. The neutral color of the parachute was lost in the gathering twilight a few seconds after he left the vessel.

The course laid, Seaton turned almost due north and the Skylark tore through the air. After a short time, when half the ground had been covered, Seaton spoke suddenly.

"Forgot about DuQuesne, Mart. We'd better iron him, hadn't we? Then we'll decide whether we want to keep him or turn him loose."

"I will go fetch him," replied Crane, and turned to the stairs.

He returned shortly, with the news of the flight of the captive.

"Hm . . . he must have made himself a parachute. I didn't think even he would tackle a sixty-thousand-foot drop. I'll tell the world that he sure has established a record. I can't say I'm sorry that he got away, though. We can get him again any time we want him, anyway, as that little object-compass in my

(Concluded on page 641)

REPRISAL

By Thomas Richard Jones



But all the time I was laying a few cement foundations at the crucial point in the ocean bed.



On the morning of November 1, 1931, Londoners were mildly amused at the following advertisement appearing in all newspapers:

WARNING

In exactly two weeks the Thames will freeze over and Great Britain will become a bleak and almost barren country. Henceforth, it will be a land of snow and ice. While it is most unlikely that this statement will be given any

credence at this time, November 15 will bring the proof.

HE WHO CONTROLS.

"Some new kind of advertising stunt," said those who took the trouble to discuss it at all. Even Scotland Yard authorities, who miss nothing out of the ordinary, did not give the warning a second thought. The Chief Weather Forecaster only smiled.

Dispatches in the afternoon papers however, brought this curious bit of

A GOOD and short scientific story is a rare thing, at least, as far as AMAZING STORIES is concerned. Here then, is one that you will enjoy all the more. It contains not only excellent science, but science that has been proven true. The Action of the Gulf Stream, as is well known, causes the British Isles to enjoy a higher temperature than they would if the Stream did not reach them. It has long been found that if the Gulf Stream were suddenly stopped or diverted, Great Britain would be a most uncomfortable place to live in all the year round. The author of this story weaves this possibility into a very clever story.

publicity into greater prominence. They announced that leading publications in Glasgow, Belfast, Dublin, Edinburgh, Oslo and several other cities had carried notices of similar import, all predicting permanent climatic changes in two weeks time.

"The copy for the advertisement," said the news stories, "was sent to each publisher from London, with cash accompanying the orders. The instructions were signed by one Boric Hengsten, who, it was assumed, represented some business firm that would later follow it up with the usual announcement of a new kind of ice cream freezer, refrigerator or other commodity. The advertising managers are accustomed to trick advertising copy and believe the originator will have reason to be pleased over the comment created. Some have expressed the opinion that the warnings were inserted by an insane person. No attention is being paid to the affair beyond a little speculation at so bizarre an announcement."

But no follow-up matter went to the press. "He Who Controls," evidently felt he had done enough for the present and the incident was forgotten by everybody.

On the evening of November 14, late pedestrians drifting through Trafalgar Square, Regent St., Oxford St. and Piccadilly, noted a remarkably rapid lifting of the blanket of fog, which had enveloped the streets, and drew their topcoats closer about them, as an icy blast swept in from the sea. Next morning they awoke to find their thermometers hovering down towards zero and falling fast. By noon it was fifteen below and when evening lights again twinkled, a solid sheet of glistening ice stretched out before the House of Parliament and traffic had long since ceased. London's millions, with chattering teeth, had sought shelter from the terrible, cutting cold.

By the second morning, people remembered. Those who did not were reminded, for blazoned across the page of every newspaper was a message of four words and it read: "*Do You Now Believe!*" and it was signed "*He Who Controls.*"

Here was a real newspaper story and it was carried in every journal, in Britain, on the continent, in the Orient, in America. The details of the cold wave which had struck England, Ireland, Scotland, Norway and other northern countries were harrowing. Ice floes filled the Irish and the North Seas; The Clyde was a solid chunk of congealed water. Shipping was at a standstill; industries were paralyzed; whole herds of sheep had perished, and the coal and food supplies, though sufficient for the moment, would need replenishing if the cold kept up. The warning of the insane jester Boric Hengsten was on every lip—not that he could possibly have had anything to do with conditions, but because it was uncanny that his prediction could have come true.

A silk hatted, dignified representative of his Majesty's Government summoned the power of Scotland Yard.

"It is absurd," he said "yet this Hengsten must be found. He could not have sent this weather, for only God can do that, yet there is a mystery somewhere; and therefore, it will help the state of the public mind

for us to find him and hear what he has to say."

But Boric Hengsten did not wish to remain in obscurity. While the police net was being carefully spread, he walked coolly into headquarters, gave his name and said:

"I am 'He Who Controls.'"

"Then," asked the officer, "will you make an explanation of your strange prediction and the luck or prophetic vision which brought it to pass?"

"I will speak only to the Premier," said Boric. "No other man shall hear my story."

"Come, then, I will take you to him at once."

Through the desolated street, still colder, they labored and finally arrived at the chambers of the Premier. The police official withdrew. The master of men and the master of science faced each other.

"Well?" began the Premier, with a questioning inflection.

"My name," said the visitor, "is in reality Boric Hengsten. I have not sailed under false colors. There is something I wanted. I was never able to get it. I have taken the only means left, the use of my scientific knowledge."

"What did you want?"

"One million pounds sterling."

"A trifle to be sure," the Premier smiled grimly, "but you have still explained nothing—your remarkable predictions, your professed control over the elements, your appearance here and your request for money."

"The situation is simple, although at present distressing," began Boric. "Call it revenge, call it simple justice—whatever you will call it, it requires one million pounds to right a wrong once done me by the government. When that is paid or assured me, I, who control your weather, will give back to you the genial climate of which you have always boasted. On the other hand, should you fail to meet my terms, the conditions you now experience will continue."

"And do you expect me," said the Premier, "to believe for a second that you have such power? Are you insane? Think man what a ridiculous proposal you make?"

"That is entirely for you to think over. I have spoken and I am a man of few words."

"Tell me," said the official, "in what way did the government do you a wrong?"

"WHEN I was a mere lad—just out of an academy—I had ambitions to become a great engineer. By the way, I have become one, in middle life. But at the time I mention, I was taking a special private course in hydraulic engineering, preparing to work my way through a technical course at the University. I was very poor, often in want. One day, while at work in my bare sitting room, I kindled a fire with some coal I had brought in a paper bag. I was wrongfully accused of having stolen the coal from a neighboring roomer. For this I served two years in prison. Though obscure, my record was good; the evidence was purely circumstantial; the judge should have rejected it. After reaching prison, I made repeated attempts to secure clemency and submitted newly estab-

lished evidence, which if heard would probably have cleared my name. I got no change. I lost two years of study; my name was blackened. I decided that some day Britain should pay."

"Well," impatiently, "what has that to do with our climate?"

"Curiously enough—almost humorously, I might say," replied Boric, "it has everything to do with it. In later years, I have overcome all obstacles. I have gone deep into many scientific subjects and I now control your temperatures. For a million pounds, I will bring you normal fall weather; without the payment, I shall be indifferent."

"I will have you confined," said the Premier. "We can at least put you where you will not be a disturbing influence."

"As you will, only by so doing you will prolong the suffering of your people and will cause untold economic waste. What about Scotland, Ireland, Norway and the others affected? Unfortunately I could not confine my operations merely to England."

"But your position is entirely untenable," argued the Premier, "the government would be the laughing stock of the world, if it listened to you."

"So far as I am concerned," promised Boric, "the world will not know. I will be that generous, although I might get some revenge from making you ridiculous. Would you give a million pounds to get your climate back?"

"Yes, every day of this is costing millions."

"This, then, is my proposal. Place confidentially, to my credit in the bank of England, the entire amount I ask, subject to withdrawal by me, if I keep faith with you. In the meantime, keep me under guard. Let me first send a cablegram in private code to New York. In a few days your cold wave will begin a gradual diminution. When you are satisfied, release me and I shall depart with my money. I assure you most of it will be spent in furthering scientific investigation, for my personal wants are simple."

"I never believed I would live long enough to commit such folly," said the Premier, "but it is agreed. To-night you go into a cell—now, within the hour—and the funds shall be deposited subject to your call."

THEN, one day the frozen streams began to empty their ice into the sea; the great industrial centers of the North countries took on life; the breezes blowing over Ireland became softer and the shamrock and hawthorn began again to be green.

The story of the crazed weather prophet had been forgotten. The greatest cold snap in history languished. Boric Hengsten bade good-bye to the mystified Premier. The bargain they had driven had remained secret among the two principals, the bank, the Chancellor of the Exchequer and the police.

"The affair has been satisfactorily terminated," said the Premier. "Whether you had anything to do with it or not, the country is again safe. But in order to restore my own self-respect, if possible, will you now tell me the real story? I guarantee you immunity from arrest. You can depart in peace with your million

pounds. God knows I am in a hurry for you to be on your way."

"Yes, I will tell you," said Boric. "The story is known only to myself and two others who will never divulge it. If you too, can avoid mentioning any of the details to any of your associates, the world will perhaps be better off, for what I know is fraught with danger—as you can see. Some years ago, I became deeply interested in oceanography and particularly so with regard to equatorial latitudes where I had important contracts. I got to studying the equatorial currents, and came to the conclusion that there must be some particular point in the neighborhood of the West Indies which would be the controlling locality in the Gulf Stream. Of course you know that the Southern and Northern currents eddy around off the West Indies, one of the big currents goes South along the South American coast and the other kicks northward, following the Atlantic coast for a while, and then takes a northeasterly course across the Atlantic, in what is called the gulf-stream drift. It is this drift that tempers your climate and keeps it from being similar to that of Labrador."

"And do you mean to say—"

"Let me finish; the boat train is nearly due to leave. I sounded those currents which are of course many miles in width, measuring their velocity and depth in many places. I analyzed the winds, the bottom of the sea, the contours of islands and finally found a small island, one of the West Indies group, the name is immaterial to you, which I decided was the pivotal point in the turn of those currents. I knew that by contriving to deflect that current at that point in another direction, I could influence the whole drift."

"And you were planning, then, your revenge on Britain?"

"Not yet. At first it was merely the study of a subject that excited my interest. Then I got to thinking of the possible results and saw that I could, in this way, make you pay for my injury and incidentally aid me in my scientific development.

"To conclude, I added to a small cruiser which I owned, a boat of the submarine type and began working out my investigation. I gave it out to the natives that I was studying tidal phenomena and doing a little fishing besides. But all the time I was laying a few cement foundations at the crucial point in the ocean bed. These obstructions, aided by a dozen large pumps placed at just the right spot, started a deflection of the North Equatorial current at its key point of strength. I found that by operating my pumps and using my submerged breakwaters, the plan worked and soon the whole drift was headed south. When my preparations were complete, I left my two confidential men in charge of the work and proceeded to New York, thence to London. I had calculated the length of time for the warm water to cool and the gulf stream to become inactive. That was easy because I knew its velocity. I could tell almost to the exact day, when your cold wave would begin. When I sent my cable some days ago, it was relayed and reached my men in Caribbean waters. They stopped operations immediately and of course nature

did the rest. The gulf stream swung into its normal channel and there you are."

"What a terrible secret," gasped the Premier. "You'll never mention this?"

"I promise," said Boric, and he left.

"Warmer weather," read the next day's report as published by the forecasters, "is still in prospect. A

gradual breaking up of the unusual cold wave, originating off the Greenland coast and which for a time paralyzed business, continues.

"The extraordinary situation, which has been thoroughly analyzed by the department, will be completely mastered by tomorrow and our climate will be restored to normalcy."

THE END

A New Scientifiction Story



The Vanguard of Venus

by Landell Bartlett

This story will not be published in any magazine but we have arranged to give it to our readers in attractive book form—ABSOLUTELY FREE. Turn to page 655 and learn all about this big Free offer. Remember! This is the only way that you will ever be able to read this remarkable tale.



By Edward Elmer Smith

(Concluded from page 636)

drawer is still looking right at him," said Seaton.

"I think he earned his liberty," declared Dorothy, stoutly, and Margaret added:

"He deserves to be shot, but I'm glad he's gone. He gives me the shivers."

At the end of the calculated time they saw the lights of a large city beneath them, and Crane's fingers clenched upon Seaton's arm as he pointed downward. There were the landing-lights of Crane Field, seven peculiarly-arranged searchlights throwing their mighty beams upward into the night.

"Nine weeks, Dick," he said, unsteadily, "and Shiro would have kept them burning nine years if necessary."

The Skylark dropped easily to the ground in front of the testing shed and the wanderers leaped out, to be greeted by the half-hysterical Jap. Shiro's ready vocabulary of peculiar but sonorous words failed him completely, and he bent himself double in a bow, his yellow face wreathed in the widest possible smile. Crane, one arm around his wife, seized Shiro's hand and wrung it in silence. Seaton swept Dorothy off her feet, pressing her slender form against his powerful body. Her arms tightened about his neck as they kissed each other fervently and he whispered in her ear:

"Sweetheart wife, isn't it great to be back on our good old Earth again?"

THE END

The Sunken World

By STANTON A. COBLENTZ

THE world of literature is full of Atlantis stories, but we are certain, that there has never been a story written with such daring and originality as "The Sunken World."

Science is pretty well convinced today, that there was an Atlantis many thousands of years ago. Just exactly what became of it, no one knows. The author, in this story, has approached the subject from a totally different angle than has ever been attempted before; and the idea, daring and impossible as it would seem at first, is not impossible. Nor is it impossible that progress and science goes and comes in waves. It may be that millions of years ago, the world had reached a much higher culture than we have today. Electricity and radio, and all that goes with it, may have been well known eons ago. Every scientist knows that practically every invention is periodically rediscovered independently. It seems there is nothing new under the sun.

But the big idea behind the author's theme is the holding of present-day science and progress up to a certain amount of ridicule, and showing up our civilization in a sometimes grotesque mirror which may not always please our vanity or our appraisal of our so-called present day achievements.

The author points out that it is one thing to have power in science and inventions, but it is another thing to use that power correctly. He shows dramatically and vividly how it can be used and how it should be used.

From the technical standpoint, this story is tremendous, and while some of our critics will, as usual, find fault with the hydraulics contained in this story, the fact remains that they are not at all impossible.

This story is published in the Summer Edition of
AMAZING STORIES QUARTERLY
now on sale at all newsstands

Ten Days To Live

By C. J. EUSTACE

WHEN man tampers with the forces of nature, something is always likely to happen, and most of the time something does happen. Our new author presents an enthralling story of titanic forces let loose by the cunning of man, which almost brought the world to an end.

As yet we know little more than nothing about the titanic forces let loose when we begin to disintegrate matter. We know that every particle of matter contains titanic forces compared to which the highest explosives are nothing more than mere toys.

Some day, these forces will be let loose unless conquered by man. If they are not conquered, we stand a good chance that the world might be blown up, or explode just as certain stars are exploding right along, probably due to some atomic forces.

Today, we handle ordinary matter exactly as savages would handle dynamite. The aborigine will not be harmed by a stick of dynamite. He can play with it, kick it around, hammer it all he wants to, and nothing will happen. The reason is that he has no detonator to explode it, no key to unlock its energy.

The same is true of ordinary matter. The five cent piece in your pocket, an ordinary pebble, a glass of water, all contain forces which are titanic and sufficient to keep the entire machinery of the world running for weeks at a time. But we have not yet found the key with which to unlock this energy.

The present story brings this home to us more vividly, and all we can say is that we sincerely hope that the liberation of energy will never come about in the manner described so realistically by this author.

This story is published in the Summer Edition of
AMAZING STORIES QUARTERLY
now on sale at all newsstands

The VOYAGE to KEMPTONIA

By E.M.Scott

CHAPTER 1

Professor Kempton



HE following advertisement appeared in the Personal Columns of an early June, 1924, issue of a well-known New York daily newspaper:

WANTED—A young man, 25 to 30 years, to fill a confidential position. Applicant must be in good health and be familiar with the Morse code. Apply in person, between 3 and 4 P. M. Professor Theophilus Kempton, Planeville, N. J.

Appearing, as it did, one among many bizarre, strangely-worded and frequently unintelligible requests, it attracted no particular attention, and aside from the usual number of curiosity-seeking or morbid-minded readers, it caught the interest of but one person; at least, it brought but one response. And it is this young man's strange story that appears in these pages.

Professor Kempton's residence stood on the outskirts of a sleepy little town, which was within three hours' ride of the center of the nation's metropolis. It was a large brick house, to which were attached several acres of land, completely enclosed by a high-board fence.

For many years, this house, with its forbidding fence—located as it was, in a tiny village that knew no fences and kept no secret—and its querulous, reserved occupant caused much comment, frequently unfavorable.

But continued familiarity is the parent of toleration. After twenty-five years, the citizens of Planeville began to take the presence of Professor Kempton and his fence as a matter of course, just as they accepted the smoke and fumes from the chemical factory at the other end of the town—unattractive, but an essential part of the life of the village.

Professor Kempton's grounds were covered with a number of buildings, of no particular style of architecture, erected at as many periods as there were structures. Each one was built for its specific purpose, without regard to the lines of its predecessors, so that the whole presented a most incongruous appearance, a sort of a "crazy quilt" effect.

Here, with an old colored couple, who cared for his personal wants, and as far as he would permit, kept his habitation in order, dwelt the eccentric old professor.

The two old colored people, Uncle Ike and Aunt Fanny Bones, were hard of hearing and near-sighted,

and possessed much of their employer's taciturnity. When quizzed by the professor's curious neighbors—as they frequently were during the learned man's residence in the village—they simply shook their heads and looked stupid—a not too difficult task—and gave out no information.

It was a well-known fact that Professor Kempton was a rich man, and by far the heaviest taxpayer in the village. He had brought considerable wealth when he first came to Planeville and had acquired much more since then in returns from his numerous inventions, for the old eccentric was no dreamy book worm; he was a shrewd inventor, who perfected and patented his ideas; and had proved himself to be a pioneer in more than one line of endeavor.

At 3 P. M., on June 10, 1924, Professor Kempton had a caller. This was an unusual occurrence, for he had no known personal friends, and his business affairs were all handled by his attorneys, in New York.

The visitor appeared at the locked gate and rang the bell; when Uncle Ike answered the summons, the unknown had handed him an envelope addressed to Professor Kempton. The servant carried the missive to his employer, who was at that time reading in his study.

Glancing at the enclosure, the professor instructed the old man to show the visitor in and to see that they were not disturbed. This was the last time the old serving man saw his master alive, although, as he later explained, he believed him to be alive as late as 1 P. M., on the 12th.

The inventor frequently spent several days at a time in his laboratory, and on such occasions Uncle Ike carried his meals to a room in

the main laboratory, where the food was kept in a warming-cabinet until the Professor found leisure for his meal.

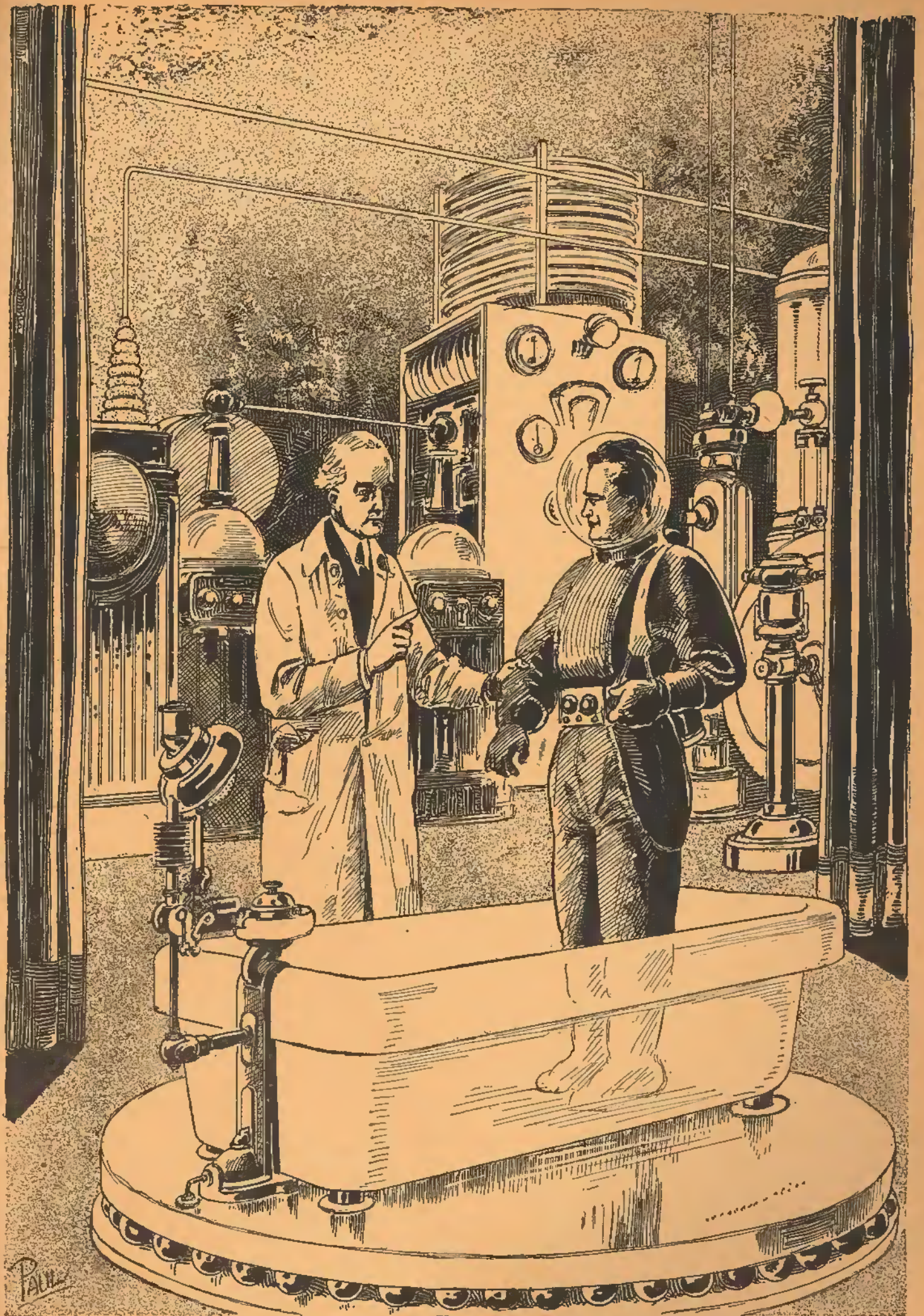
At about 12:50 P. M., on the 12th, the old man had served luncheon for his employer. This food was partly consumed, though Uncle Ike did not know just when, but it must have

been between this hour and 5 P. M., at which time the old inventor's lifeless and badly charred body was found in another part of the building.

A record of the events which occurred between 3 P. M. of the 10th, and 5 P. M. of the 12th, can best be supplied by the statement of Edgar Lawton, Professor Kempton's mysterious visitor, and by certain notes and data written by the Professor himself during this interim.

It should be known that Edgar Lawton's statement

WE are giving a charming tale by a new author, and we hope you will like it as much as we did. The idea of an extra terrestrial body located between the earth and the moon, and which might more properly be termed a second satellite, is not new. Certain irregularities of our moon's motion have never satisfied our astronomers and there are still some who claim that somewhere between us and our moon there is another body, small to be sure, which causes the moon's disturbances. Be that as it may, "The Voyage to Kemptonia" is a charming tale, which we know you will enjoy.



We now returned to the little curtained alcove where I made my final preparations and received Professor Kempton's last instructions before starting on my great adventure.

followed his interrogation by the coroner of M—— County, New Jersey, when that official investigated the circumstances of Professor Kempton's death. And in justice to Lawton it must be said that, while he refused to talk about the matter at first, he did not deviate from any of his statements later, when he did commit himself.

CHAPTER II

Lawton's Statement

THIS statement of facts has been prepared to explain my part in the events that took place at Professor Kempton's laboratory, during the time intervening between 3 P. M., on June 10th and 5 P. M., June 12th, and also to refute the charge that I murdered this learned man, whom I had never met until the afternoon of the 10th of June, and for whom I had only the kindest feeling.

I also desire to do justice to a great scientist's memory, for the marvelous results of our experiment clearly prove, to my mind at least, that Professor Theophilus Kempton was an investigator far beyond the limits of the present age, and that a true appreciation of his last wonderful invention must be left for future generations.

Now that much of Professor Kempton's apparatus has been destroyed by fire, and so many of his formulas are lost, we can only wait until some other genius shall re-discover his missing principles and deductions.

I am not an educated man and am particularly ignorant regarding the facts and principles dealing with chemical and electrical science; therefore, I can only relate the true story of what took place after I met Professor Kempton. But to do this I must first briefly tell of the events preceding my entrance into his employ.

My name is Edgar Lawton. I was born in San Francisco twenty-eight years ago. I am a telegraph operator by occupation and have followed my trade in many states, as I am of a roving disposition.

The morning of June 10th, 1924, found me seated on a park bench in New York City, along with many other penniless castaways, although I was probably better off than some of my neighbors of the bench, for I still had a decent suit of clothes and two or three dollars in my pocket. But at that, matters looked far from rosy.

I had been in the "World's Greatest City" two months and in this time had worked exactly ten days on almost as many jobs, as an extra hand. In fact, my financial condition was rapidly becoming desperate. I had been able to secure no employment during the past two weeks, and would soon be unable to provide myself with food, or even the poorest kind of a bed.

I sat there breakfastless and weary, idly scanning the pages of a discarded morning paper, when my glance caught sight of Professor Kempton's advertisement. It looked good to me, and I decided to answer it.

Acting on this impulse, I made my way to the nearest railway depot and inquired when I could get a train to Planeville, and how much it would cost.

"Eleven-fifty. One-sixty-nine," replied the lordly personage behind the wicket.

"Lucky this time," I thought as I passed over a two-dollar bill, the principal asset of my bank-roll.

After purchasing my ticket, I had only about one dollar left, and I spent the greater part of this for a shave and some breakfast. My train reached Planeville about 2:30 P. M. I timed my walk so as to reach Professor Kempton's residence about three o'clock. It was an agreeable surprise to find no one else waiting.

I immediately rang the bell at a gate in the high board fence that surrounded the entire property. This was answered by an old negro, to whom I handed an envelope addressed to Professor Kempton, in which I had enclosed a copy of his advertisement, along with my own name.

I waited with considerable anxiety, while the old fellow refastened the gate and carried my message inside. He returned in a few minutes and admitted me, led the way into the house and upstairs to a large room on the second floor.

After ushering me into this apartment, my guide left me and I found myself in the presence of a small, slightly-built, elderly man, with sharp, frosty blue eyes and close-cropped gray hair. He was dressed in a dark suit, over which he wore a long white linen "duster."

"Please be seated," my host said, indicating a chair, and continued. "I am Professor Theophilus Kempton, and would understand from this," holding up the clipping I had sent in, "that you came in answer to my advertisement for an assistant."

Replying in the affirmative, I handed Professor Kempton my credentials, as a professional telegrapher.

"You would appear to be an operator of some experience, Mr. Lawton." He returned my papers and continued, "Please step over here and try out this set." He indicated a telegraphic outfit attached to a nearby desk.

As I seated myself, Professor Kempton returned to his own desk, which was also equipped with a small portable outfit, and for the next few moments we carried on an animated conversation in the Morse code.

I always considered myself a very competent operator, but compared to this man, I seemed a rank amateur. However, he seemed satisfied with my ability, and when we were seated in our former positions again, he began to discuss the other requisite qualifications.

"Your health, Mr. Lawton," he asked, "is it good?"

"Excellent," I answered. "I have never been seriously ill, or severely injured in my life."

"You are fortunate," he commented, and after a moment, "You will understand, Mr. Lawton, that the services I shall require are strictly confidential; and if, after I have explained my proposition, you do not care to assist me, I shall reimburse you for your loss of time and expense, and you will be free to withdraw. But first, before we go further into this matter, I shall require your solemn promise, that, regardless as to whether you accept or refuse my offer, you will never reveal anything that may transpire here or that I may confide in you—that is, during my lifetime or until I give you permission to speak."

This statement, so plainly and directly made, had a chilling effect on my enthusiasm to become Professor Kempton's assistant. It seemed to me there was some nefarious business afoot.

Sensing my dilemma, the Professor came to the res-

cue. "If this will aid you in making up your mind," he remarked, "I can assure you that my undertaking is perfectly lawful, although it may involve some personal danger to yourself."

"In that case," I replied, "I am willing to subscribe to your conditions."

"Very well, then. I shall explain to you the principles of an apparatus that I have recently perfected, also the experiment with which I shall require help. But first as to the remuneration. It is possible that I shall need your services only for a few days, but I will specify an engagement for a period of two weeks, for which I shall pay you one-thousand dollars.

"I have already informed you that there may be some danger involved in our experiment, although I believe that it is perfectly safe. If you accept I shall require you to sign a statement testifying that you entered into this matter of your own free will and with a full knowledge of the possible risk.

"You see," he added, "if the unexpected takes place and something should happen to you, I do not want to be indicted for your murder. But there will be time enough for these matters when you accept my offer.

I shall now attempt to explain the general purpose of my invention in such a way that it will be intelligible to you."

In giving Professor Kempton's explanation, I shall use his words, as well as I can recall them. However, the reader must keep in mind the fact that I am unfamiliar with the principles of the science with which his statements dealt, and that I may unintentionally garble or misstate his views.

CHAPTER III

The Professor Explains His Invention

"I AM, and have been for many years, an investigator and a seeker after knowledge," Professor Kempton began, "giving particular attention to communication by the medium of electricity and to the study of astronomy.

"I have written numerous articles on these subjects and have also patented a number of inventions pertaining to the transmission and utilization of the electric current.

"My income from these and other sources is larger than my needs, so that for the past five years I have been engaged in private experiments, on the subject of radio communication and similar phenomena. I have also spent considerable time in observing the heavens, by means of a powerful telescope that I have invented."

"In my later studies in astronomy I have broken away from the general practice of observers, and instead of expending my efforts in vain observations and conjectures on distant planets, I have turned my attention to the discovery and study of the wonders of the sky, that are near at hand."

"Perhaps you are aware that the moon is not the only satellite that revolves around our earth. There are numerous other tiny bodies, if we may so designate them, to which the general term satellites is usually applied."

"These little satellites, which may be fragments of our own, or other more distant worlds, hang suspended, as it were, in the depths of space; and as they are on the edge of, or just beyond the limits of the earth's atmosphere, they are subject to the attraction of both earth and sun. And as the sun's attraction is just sufficient to prevent their falling on the earth, they remain fixed in space but continue to revolve around the earth."

"The majority of these satellites are too small and infinitesimal to be of any consequence. But after long continued telescopic explorations, among these tiny worlds, I have discovered one of them that is infinitely larger than its fellows.

"By means of many observations, I have gathered much information regarding this satellite, which, exercising the time-honored rights of discovery, I have named Kemptonia, in honor of myself, as its discoverer.

"I find that Kemptonia revolves around the earth, in a regular orbit and is about thirty miles distant from our globe. This little follower of the earth travels through space at the rate of about three miles per minute, requiring approximately six twenty-four-hour days to complete its orbit. It also revolves upon its own axis, as does the earth, but much more rapidly, considering its relative size. But more of this later, when I will show you this satellite.

"I also discovered that Kemptonia is, at all times, surrounded by a mist or vapor, a fact which no doubt tends to obscure its observation from the earth and which has prevented me from closely observing its surface; it also leads me to believe that it must possess an atmosphere, no doubt much more rarefied than that of the earth.

"If Kemptonia has an atmosphere, it should also sustain life. But, as the constant presence of this vapor has prevented my observation of its surface, I have been forced to proceed along other lines in my investigations.

"At one time I considered the construction of an airship, with an enclosed car, of sufficient size and power to allow me to visit my planet, as I secretly called my discovery, but I abandoned this idea as being impractical.

"I then turned to radio, by which means I hoped to develop a process that would enable me to penetrate the mists which surround Kemptonia, and to communicate with its inhabitants, if it supported intelligent life."

"My experiments along these lines led to the development of several new and wonderful rays, heretofore unknown, and finally to the knowledge of a most stupendous discovery, which I now desire to subject to a final test, before announcing its existence to the world.

"I will not attempt to explain my discovery to you, in technical terms, but will simply state, that by the joint application of certain electrical rays, in connection with particular chemical reagents and under certain physical conditions, I am enabled to dissolve, transport and re-mold matter.

"In other words, my discoveries permit me to etheralize your body, transport it, as sound is transported by the ordinary radio, reassemble it at a fixed destination,

and then return it, by the same means, unharmed, to my laboratory."

I suppose that my looks betrayed my incredulity, for I believed myself in the presence of a madman. At any rate, Prof. Kempton paused, in the midst of his discourse, to remark:

"Young man, I am neither crazy nor a fool, and have repeatedly verified, by actual experiments, every statement that I have made.

"As I have stated," the inventor went on, "my inventions and discoveries have enabled me to dissolve matter, to convey it, as sound is conveyed; and then when it has been transported to its destination, to re-assemble it, in its original form. And, when I so desire, by a similar process, I can recall it to its starting point, and resolve it into its former body.

"No doubt this seems impossible to you, just as it did to me when I made my first discoveries along these lines. But remember that I did not evolve these wonders off-hand; it was merely by accident that I learned that the application of certain electric rays and chemicals, dissolved or etherealized some particular forms of matter. This gave me the opening wedge, the rest is the result of hundreds of painstaking experiments and years of careful study and research."

THE earnest, convincing manner in which Professor Kempton delivered his statements, to some extent overcame my skepticism, so that I decided to hear him through anyway, and to inspect his invention.

"When I found that I could dissolve and re-assemble the atoms of inanimate matter," my companion continued, "I began to experiment with the lower forms of animal life, gradually advancing up the scale, until I used rats and guinea pigs as my subjects.

"When I found that I could successfully dissolve and construct, without apparent injury, the bodies of live animals the idea occurred to me that, if I could convey their bodies through space and then re-animate them at a distance, I would, in this way, be able to visit and explore Kemptonia.

"After many unsuccessful experiments, I perfected an apparatus, on the general plan of a radio broadcasting machine, that allows me to send and receive, as it were, living matter, without any destruction of life."

"But, Professor Kempton," I interposed, "if you have developed such an instrument, why bother exploring a tiny moon belonging to the earth? Why not investigate some of the great planets?"

"I rather expected some such a question," the professor answered. "I will tell you. In the first place, my present apparatus is entirely too weak to carry my rays to the nearest of the planets. In the second place, although it might be possible to construct a machine powerful enough to convey matter to the distant stars, I desire to transport and recall living, not dead, matter. And no form of life could survive a voyage through the deadly cold of the immense space that separates us from the major planets. But I have transported several animals through the comparatively insignificant distance that separates Kemptonia from the earth. Some of these I have returned, others I have allowed to

remain there. I did not care to bring them all back.

"The farther I advanced along these lines, the more I became impressed with the necessity of the great care and accuracy required in the operation of my delicate instruments, to insure the successful termination of an experiment.

"In fact, I finally became convinced that it would necessitate years of coaching and instruction, on my part, before I could safely entrust the whole operation of my inventions to a second party, in an experiment involving the hazard of a human life.

"This difficulty promised to indefinitely postpone, if not preclude, my scheme of visiting Kemptonia. Therefore I have decided to make my investigation by proxy.

"I might say at this time, that, in anticipation of making this voyage and to insure a safe return, I have made certain vital preparations, among others the construction of a cold-proof garment, or armour as you might call it. I did this because I found that the temperature of Kemptonia, at times, is much colder than that of the earth. It was also necessary to prepare an apparatus to allow the free breathing of the rarefied air that will be found on the satellite.

"These articles are constructed of elements most susceptible, to the control of my processes. They are also prepared with the view of overcoming the lightness of the Kemptonian atmosphere.

"Since I have decided to 'visit' the satellite, in the person of another, I felt the necessity of keeping in constant communication with my subject. For various reasons it was not advisable to depend on vocal means. Therefore I have taken advantage of my knowledge of telegraphy, and invented an instrument, built of elements similar to those used in constructing the garments of which I spoke, that will enable the subject after he has been re-substantialized—to send and receive communications, by means of the Morse code.

"Having perfected my scheme, and the equipment necessary for its successful execution, it was then necessary for me to secure the services of an assistant to help me. With that end in view, I inserted the advertisement which you, so opportunely, answered.

"Now, Mr. Lawton," my strange host concluded, "I have tried to describe the workings of my plan, and must ask you for a decision as to whether or not you will help me put it into operation."

"Before I can give you a final answer, Professor Kempton," I replied, "I desire to see your apparatus and to view the planet, or whatever it is that you have discovered."

"Very well," the other rejoined, rising. "Come with me."

CHAPTER IV

Professor Kempton's Laboratory

I FOLLOWED my host down the stairs and through a long hall, which divided the house, and out through a rear door, into the grounds. We crossed the grounds, which were large and half covered by a number of out buildings, of various shapes and sizes, until we came to a large, one story, brick structure, with a curious octagon, shaped tower at one end.

This tower rose fifteen or twenty feet above the roof of the building proper.

The Professor unlocked a narrow door admitting us into the tower, which contained numerous books and charts, as well as a number of instruments, such as, I believe, are used by astronomers; at least one was a large telescope.

"This telescope," Professor Kempton informed me, "is of a special design, which I have myself perfected. It possesses a number of unusual features, among others, that of instant change in its powers of magnitude, and a light elimination lining, that allows me to observe celestial bodies with the same ease, night or day.

"At the present moment," he went on, indicating a point on a large chart, suspended on the observatory wall, "Kemptonia occupies this position, in relation to the earth."

The Professor then made a few rapid calculations, checking the time carefully with a chart, and brought the lens to bear on a point, near the horizon. He explained, as he did this, that Kemptonia revolved around our earth from east to west or in the opposite direction to the rotation of the earth on its axis. He also informed me that, while the tiny satellite rotated on its axis, its size was so minute that it did not cause night and day but only a slight dimming of its daylight. This day lasted as long as it traversed that part of its orbit that was between the earth and the sun, or approximately seventy-two hours. Its night was the period during which the earth was between it and the sun and was equally long.

After looking through the telescope for a short time and making several adjustments, the Professor invited me to take his place. This I promptly did, for I was very curious to observe Kemptonia. Also, I had never had an opportunity to use such a large instrument.

I saw a large pale luminous disk, surrounded by a vaporous cloud of mist, through which a large dark colored mass showed up rather indistinctly.

"The lenses are now set for twenty magnitudes," my companion informed me. "I will now increase the magnifying power and let you make further observations."

We spent approximately an hour in the observatory, where we viewed the tiny satellite, as a whole and by sections, at various ranges, but found it impossible to penetrate the enveloping mist and see what it concealed.

We next went into the main building, which, Professor Kempton told me, was his principal laboratory and work shop, and which housed his inventions. These occupied the space of about one half of the entire building, and their section was separated from the laboratory proper by a thick wall. It was also further sub-divided into several apartments.

The largest of these contained what he styled his "Broadcaster;" this equipment resembled the ordinary broadcasting outfit, except that some parts were excessively massive and were made of an odd looking metal.

"An alloy of my own composition," my host stated, pointing to one of these parts. "It gives better results

for my purposes than the material generally used."

The ceiling and walls of this room were a labyrinth of wires, of many sizes, some insulated, others bare. These wires connected the broadcasting equipment with the other rooms and with the antenna, outside the building.

A room about ten feet square housed two small, but powerful looking, dynamos. One of these my host remarked, was connected with the city lines, the other to a gasoline-operated generator, located in another part of the building.

He installed this system, he explained, so that even if there were a breakdown in the city plant, his work would not be affected. He had merely to cut in with a connecting switch and use his own power.

ANOTHER small apartment was prepared for the operator of the various machines. This room had a switch-board extending around three of its sides and was fitted with numerous switches and indicators. It also contained a chair, a desk and a small cabinet, to which were attached a set of head-phones and a telegraph key.

We stopped here only a moment, then Professor Kempton led the way into another and much larger room, fitted with what appeared to be a sort of an exaggerated radio receiving station.

There were hundreds of wires, running in all directions, rows of tubes and cones, all connected with a series of huge storage batteries and with the switch board in the adjoining room.

One corner of this room was partitioned off by a thick, asbestos-like curtain, reaching from ceiling to floor; several trunk lines of wires extended through these drapes.

Holding the curtain aside, the Professor ushered me into this niche, which was about eight feet square and was entirely enveloped by the hangings. It contained only one article of furniture, a metal piece that resembled a shallow metal bath-tub, with a sort of a shower or spray attached at each end and a drain from the bottom. On it lay an odd fantastic looking garment.

"This is what I call my operating room," my companion said. "This is where I place my subject, whose body I am about to send through space and here is where it is returned when its mission has been accomplished."

"This robe," he continued, holding up the garment I had noticed, "is the armour I spoke about some time ago. It is composed of a metallic fabric, and although light and flexible, is very strong and resistive. You will also notice the telegraphic sending outfit attached to the belt."

I carefully observed this robe and may as well describe it here. It was of a pale muddy color and constructed much like a diver's outfit, except that the helmet was permanently attached. The hands were covered by gloves and the helmet was fitted with transparent eye pieces and a breathing apparatus. Suspended from the waist and convenient to the right hand were an odd looking transmitter key and a sounder, while the right ear was equipped with a head phone. At the left

side hung what resembled a short mace or policeman's billy.

"You will notice here," Professor Kempton went on, laying the suit down, and pointing to the floor, "that this couch, or tub as you may call it, is located on a revolving disk; this gives the subject the required motion, while the chemicals are supplied by the two sprays. It operates in this way—"

And drawing me into a corner, he pressed a button and the center of the alcove, to which the tub was fixed, began to revolve slowly and the sprays to throw off a shower of fragrant smelling vapor.

"The speed of this disk and the flow of the chemicals," he explained, shutting off the switch, "is controlled from the main switchboard, in the operating room, as are all of the other processes.

"But," he concluded, "listening to dry lectures has no doubt given you a famous appetite. We will see what Uncle Ike has prepared for our supper."

With that he led the way to the main laboratory, and opening a small electrically heated cupboard, removed a tray of steaming food.

"A device of mine," he remarked, setting the tray on a small table. "which allows me to dine at my convenience and without leaving my laboratory; when I do not show up for my meals, Ike carries my food out here."

We drew up a pair of stools and fell to the excellent meal without more ado. When we finished, my companion broke the silence.

"Well Mr. Lawton," he said, "I guess we have arrived at the point where you must make your decision. What shall it be, yes or no?"

That was the question I had been debating with myself, for some time. When I arrived at Professor Kempton's home, I had intended to accept his proffer, regardless; but as he was going through his explanations, I believed him more and more insane and wanted nothing so much as a chance to escape from his presence.

Now however, having heard his complete statement, and having viewed the elaborate equipment he had constructed, I was sorely tempted to accept his proposition. True, there might be danger connected with the experiment, but there was a fascination in the thought of passing through space and exploring another planet, a new world, one might say, even if it were only a tiny satellite of our own earth.

I would be the first human being to thus discard the encumbrance of matter and visit the realms of the sky. Of course I had heard of certain men being able to send a part of themselves, their astral body they called it, to great distances, but then their natural body remained behind. This however was different; I would be transported through space and then, materialized, would in my own bodily form explore the unknown. Also there were the thousand dollars that would be my remuneration; it seemed an immense sum; I could afford to take a long chance for such a sum.

I decided the achievement would be worth the risk. If I hesitated further or declined, the chance to take this wonderful trip would never return.

It has taken some time to explain these thoughts, which influenced my final decision, but, in reality, it took but an instant of time, and I told my host that I would accept his offer.

"I fully expected you to say that," he said, "and I can assure you that I will use every care and precaution, and that I have no doubt but that you will safely return. If there had been some one else competent to operate my instruments, I would have gone myself long ago."

The Professor then unlocked his safe and securing a small package, handed it to me. It contained fifty new twenty dollar bills, one thousand dollars, a fortune it seemed to me.

"Where can I put this money?" I asked. "I do not care to take any chances of losing it."

"Lock it in that cupboard," the other replied, handing me a key and indicating a small locker.

I put the money in the pocket of my coat and locked both in the cupboard, retaining the key. Then, at the Professor's request, I signed a statement exonerating him from all blame, in case of my injury or death, during our experiment.

CHAPTER V

I Land in Kemptonia

WE now returned to the little curtained alcove, where I made my final preparations and received Professor Kempton's last instructions before starting on my great adventure.

"And now Mr. Lawton," the Professor concluded, after instructing me upon a number of details, "it will require about eight hours to prepare and transport your body to Kemptonia, and as many more for your return; I would like you to spend twenty-four hours exploring the satellite; this will make up a total of forty hours required to complete the experiment."

"During the next forty-eight hours, Kemptonia will be in a most favorable position for our purpose. If we do not take advantage of this opportunity, it will be necessary for us to wait almost a week or until the satellite completes its orbit around the earth and much can happen in that time."

Personally I believe he was afraid that I might back out of my bargain unless we started immediately. Anyhow, he was very anxious to start at once.

I had made up my mind to see the thing through, so I removed my clothes and put on the robe Professor Kempton had prepared. I found it soft, fleecy and very comfortable. Then at his direction, I lay down and stretched out at full length in the tub.

"Have no fear," he whispered, before leaving me, "you will soon fall into a sleep and know nothing until you awake upon Kemptonia, and you will return in the same way; but be sure and communicate with me as often as you can."

I nodded my head, and lying back, closed my eyes. The Professor pressed the wall switch, causing the tub to revolve slowly and a fine spray of the sweet smelling chemical to shower over my body. He then left the closet, carefully closing and fastening the curtains.

This was the last time I saw Professor Kempton alive, although I communicated with him a number of times during the next thirty-six hours. After he had been gone for a few moments, I heard a humming noise and the movement of the tub began to increase. I supposed he had opened the switches that connected it with the other machinery. Then I fell asleep and knew no more.

How long I slept I can never tell. I had many wild fantastic dreams and seemed to feel a gripping cold, which chilled my body through, although the room, where I fell asleep, was warm. I cannot recall any of my dreams, although I know that I dreamed.

Then as abruptly as I had fallen asleep I awoke—awoke to find myself standing in an open plain, with a rich yellow light shining about me and a luxuriant, but pallid looking foliage reaching almost to my knees.

I believed that I was still dreaming and started to rub my eyes, but found I could not touch them, that I was looking out through something transparent, and that my hands were enclosed in gloves.

Then with a wild start, I recalled all that had gone before—I recalled my visit to Professor Kempton, his story and our mutual experiment. That was it—the wild, daring experiment had been successful. I had encompassed space and was now standing on the surface of Kemptonia. It must be that, for as I looked around me, I knew the spot on which I stood was like nothing I had ever seen before, in all my wanderings. In a way it was like the earth, but still in some manner, that I could not explain, it was subtly different.

Then, without warning, some one or something began to beat measured strokes, now short, now long, close to my right ear. The unexpectedness of the sound was too much for my nerves, already badly jumbled, so that I gave a quick leap to my left.

Then something occurred that startled me more than ever. Instead of jumping three or four feet, I easily covered forty, and at the highest point of the arc I made as I sailed through the air, I know that my body was easily twenty feet above the surface.

Now like a flash it all became clear to me. I was on Kemptonia, whose lack of gravity reduced my body to a fraction of its earthly weight. I had not noticed this in breathing, on account of the protective inhaler attached to my helmet. The pounding at my ear—that must be the telegraph sounder. Professor Kempton was trying to call me.

Hastily moving the adjuster, with which the ear phone was equipped, I reduced the volume of the sound and began to listen to the strokes, now distinguishable as dots and dashes, and to interpret them into letters and words.

L-A-W-T-O-N—L-A-W-T-O-N, I spelled out. Then, taking hold of the sounder at my side, I slowly and awkwardly—for the gloves hampered my fingers—tapped out the word. Y-E-S. Y-E-S.

A moment later another message came to me from my mentor on earth.

"Lawton, are you all right?"

"Yes," I replied. "Where am I?"

"In Kemptonia. I have tried to raise you for hours.

"Why did you not answer?"

"I just woke," I sent back. "What shall I do now?"

"Walk over the country and observe it; send me your impressions. I will call you from time to time. It is twelve hours since you started. This will cut short your time in Kemptonia."

I now started across the open plain, toward some trees, perhaps a mile away. As I have already stated, the foliage and grass there was a pallid greenish-yellow color, like some earth plants that are grown in cellars or somewhere away from the light of the sun.

It was very evident that a perpetual fog or mist surrounded the surface of Kemptonia, warding off the full effect of the sun's light and heat. This vapor did not lie close to the surface, but hung suspended, two, or three hundred feet above it. The land itself, so far as I could see, was comparatively level.

I moved along at a rapid rate, each step carrying me as far as three would upon the earth. In a short time I reached the clump of trees toward which I was traveling.

These trees covered an area of two or three acres and ranged from twenty-five to one hundred feet in height. They had a smooth bark and were branchless for about half their height. Their bark and leaves were of the same pallid yellow green shade, as the grass at my feet. Indeed, I found this color uniform throughout Kemptonia; the foliage of these trees resembled those of our sycamore.

I found only two species of trees growing on the satellite—the one I just described and the other a short bushy species like our fir, but dwarfed in size.

After moving through this little grove, where I found a spring of pure water and some wild berries, I communicated with Professor Kempton, who seemed beside himself with joy, at the success of his plans.

I continued my explorations, making my way toward what resembled a large lake. Up to this time I saw no signs of life of any kind.

CHAPTER VI

The Inhabitants of Kemptonia

ADVANCING toward this lake, I came upon a small creek, perhaps twenty-five feet in width, and three or four feet deep. The water was clear and cold and had a slightly acid taste. I followed the meanderings of this stream as I advanced, but as it became more irregular in its course, I cut across the bends for it was easy to leap from bank to bank.

At last I approached the mouth of the creek, which I saw emptied into a large body of water, upon whose surface, several hundred feet from the shore, a raft was floating. I was particularly surprised when I perceived that the raft was propelled by two beings that resembled men.

While I stared open-mouthed at this phenomenon, I heard a slight noise behind me and turned, just in time to catch a glimpse of a figure that was watching me from the shadow of a bush, on the opposite side of the stream.

This observer, whoever or whatever it might be,

instantly disappeared among the brush and grass; but my curiosity was aroused and leaping the creek, I started in pursuit. The other saw my approach and commenced running across the open, like a frightened rabbit.

My quarry ran rapidly, fleeing toward a patch of rough wooded ground, along the shore of the lake; but his efforts were fruitless, for aided by my greater, earth-born strength, I covered as much ground at one leap as the other did in six, so that I speedily overtook and captured the fleeing creature, who immediately began to jabber, in a high squeaky voice. It was a most extraordinary looking being that I held, squirming and wiggling, in my grasp. Later, I discovered that it was a fair specimen of its race and I will, therefore describe its appearance in some detail.

The creature was unquestionably of the male species, and was about five feet in height. His color was a washed-out, dirty yellow, slightly darker on the more exposed parts of the body. The lower limbs and hips were thin and spindly; the feet, which had five toes of nearly equal length, were broad and flat.

His shoulders were narrow and his arms slender, the hand consisting of four long fingers and a very short thumb. His head was the size of that of a boy of six years and was bald, except for a thin covering of yellow fuzz on the crown, apparently the only hair on his body; the face was smooth. The features were of a Mongolian cast, the ears small, nose flat and teeth prominent.

However the strangest thing about the extraordinary creature was his chest, which, in comparison with the rest of the body, was enormous, bulging out both front and rear. As my captive was weak, his strength not exceeding that of a child of seven or eight years, I concluded that the huge chest was filled with the large lungs necessary for the breathing of the rarefied air of its world.

His clothing consisted of what seemed like a pair of breeches, reaching from waist to knee, and a short cloak. These garments were crudely woven of grass or rush fibers. For weapons he carried a crudely made stone hatchet or tomahawk and a stone knife; in appearance and structure this material resembled flint. My prisoner made no effort to use his weapons; indeed he was too badly frightened to do more than offer a passive resistance.

However, when I finally released this strange being, and by signs showed that it was free to depart, it quickly recovered the use of its legs and scampered off toward its original destination.

I now got in touch with Professor Kempton and briefly related my adventures up to this time. He urged me to learn if there were many of these extraordinary creatures on the satellite, and if possible learn something about their habits and customs.

I now advanced along the route followed by the Kemptonian, and had almost reached the rough ground, which I have already mentioned, when I perceived a score or more of the strange beings coming toward me.

At first I feared that they intended to attack me; but I soon saw that they carried no weapons, bearing

branches of the fir-like tree instead. These they waved in the air to signify their peaceful intentions. Foremost among these natives of Kemptonia, was my late captive, who now appeared to have recovered from his fear and to be acting as a sort of a chairman to my reception committee.

The Kemptonians, as I shall hereafter call these strange creatures, signed for me to follow them and turning, trooped back among the trees toward their habitations. These consisted of a number of caves or burrows in the face of a small bluff, facing the lake. The dwellings were, as I learned upon investigation, quite shallow and I believe artificial.

Smoke rising from before one of the caves informed me that the natives had learned the use of fire. For fuel they use a kind of peat, mined from a bog near their dwellings. This fuel is dug with stone and wooden tools and then carried to a place near the caves, where it is piled in heaps and allowed to dry before using.

Of course, I did not gain all of this information at once, but picked it up little by little, during the several hours I spent as a guest at this village of the Kemptonians.

My attempts to communicate with these people, except by signs, were futile. They had a language, by means of which they conversed with one another; but it was as impossible for me to comprehend them as it was for them to understand my language. As near as I could tell, their dialect was somewhat similar to that of the South African Bushman; at least they made frequent clicking sounds and their tones were very high and shrill.

CHAPTER VII

Joe and Judy

THE Kemptonian whom I had first met, paid me especial attention. He had fully recovered from his fright and seeing that I was anxious to learn about his people, he acted as a guide, showing me everything that he believed would interest me. Indeed all of these simple-minded folk treated me as a superior being.

This man whom, for the lack of another name, I called Joe, led me to his family cave, pointing out one of the females as his wife. She was better looking than the majority of her sisters. I named her Judy.

In general appearance both sexes seemed much alike except that the females were not so tall, had more and longer fuzz on their heads and wore a long, sleeveless, single piece garment, reaching from the shoulder to the knee.

I learned that there was little government or political organization, among the Kemptonians, except that of the family or clan. My guide's family, consisting of twenty or twenty-five members, was the largest of the seven or eight groups that made up the little colony; and as Joe was the most influential male of his family, he automatically became the leader of his community, as far as any one individual acted as a leader.

The Kemptonians were expert swimmers and spent

much time in and on the water. They did not possess boats, but built small rafts from poles and floored them with rushes and clay. These they used for fishing. However their craft could not venture far from the shore, as they had no oars or sails, and were poled along by means of a long pointed stick.

I found that fish existed in great abundance there, and formed one of their staple articles of diet. They had a small animal resembling a goat, which was domesticated, and like the reindeer of the Laplander, supplied its masters with food, drink and clothing.

They also raised flocks of fowl, similar to our ducks, at least they had web feet and could swim. There were a few species of wild birds, all small and of a dirty yellow shade.

So far as I could learn, there were no other forms of animal life on Kemptonia. Neither did I see nor learn anything of the animals transferred here by Professor Kempton. These probably soon died from the effect of the rarefied atmosphere. All of the bird and animal life belonging to the land, were, like the Kemptonians, equipped with extremely large lungs, which allowed them to breathe the thin air of the satellite.

The plane of civilization on Kemptonia, as well as I could judge, was above that of the savage and below the standards of the barbarian. In the matter of tools and weapons, they were still in the early stone age. But in some other lines, they were much farther advanced. They had domestic animals and cultivated the soil. Each family had a regular garden plot, in which they raised several varieties of vegetables, both roots and greens.

As is customary with many savage and semi-savage tribes, the Kemptonian women perform much of the labor. The weaving of the grass mats and garments, preparation of hides and the working of the gardens fall to them. The men hunt and fish, and dig and prepare the fuel. The domestic animals and fowls are herded by the children.

The total surface area of Kemptonia, according to Professor Kempton's calculations, is less than twenty-five thousand acres, and, as my later explorations showed, more than one half of this is covered by water; the land area could not be much more than ten thousand acres.

It was difficult to learn the number of settlements, but, from the information I secured from Joe, I believe there were seven, including his own, which was the largest. As its population, old and young, numbered less than one hundred, the total number of the Kemptonians could not be more than five or six hundred souls.

These tribes or clans seem to live at peace with one another, but do not appear to have much intercourse and do not inter-marry. This practice of marrying within the tribe may help keep down the birth-rate, which is just about equal to the number of deaths.

The number of children in a family ranges from one to three. Joe and Judy have two offsprings, both boys, who are about half-grown.

Monogamy is practised exclusively and divorce or

unfaithfulness is apparently unknown. The marriages are arranged by the parents of the contracting parties and are simple in the extreme. The bride, escorted by all of her family, is conveyed to the dwelling of the groom, which she enters and is henceforth considered as a member of his family. Then a feast is held immediately afterward, in which all members of the community participate. This, so far as I could learn, ends the ceremony.

I could learn but little of the religious and burial customs of the Kemptonians. They do not have either priests or medicine men; but I believe that they worship light, and frequently prostrate themselves, face downward, on the ground. The dead are buried in this position.

The care of the sick appears to devolve on the oldest woman of the family. There was a sick child in Joe's family, at the time of my visit; it was nursed by a wrinkled old crone, who from time to time administered doses of a concoction brewed from herbs.

From the data given me by Professor Kempton, and what information I secured from Joe and other Kemptonians, I believe the Kemptonian day lasts for about seventy-two hours of our time, their night for an equal period, with a short interval of twilight and dawn.

The Kemptonian nights are very cold, and I believe that the long periods of darkness and the attendant low temperature, as well as the enveloping mist, influence the character of the vegetation and help to produce its peculiar faded appearance.

The mist, while it lowers the temperature of the light period, also shelters the satellite from extreme cold during the long night, at least during the winter season.

The Kemptonians are busily employed at their occupations during their long day and retire to their caves at the approach of darkness. In front of these caves, a warm peat fire is kept burning. At least so I interpreted the sign story told me by Joe and Judy.

After spending several hours in the Kemptonian village, I set out to explore other portions of the land, Joe accompanying me as a guide. Of course I communicated with Professor Kempton regularly, briefly sketching my experiences and receiving his replies.

CHAPTER VIII

My Further Explorations and Return to the Earth

WE now started to follow the shore of the lake or sea as one might call it, considering that it occupied at least one-half of the entire area of this miniature world. I might state here that all the water that I found on Kemptonia was fresh.

After traveling two or three miles I noticed that Joe was beginning to tire. This promised to prove a perplexing dilemma. The presence of the little Kemptonian would be of considerable advantage to me if we met others of his kind; he could take me to the most interesting places in this land, and he was quite adept at explaining, by signs, the wonders we encountered.

On the other hand if I accommodated my pace to

his, we could only cover a small part of the country in my remaining few hours in Kemptonia. However, a happy thought came to me.

If Joe had been upon the earth, he would have weighed about one hundred pounds; on Kemptonia his weight must be only about one-sixth of his earth weight, whereas my earth strength remained unchanged. Therefore, setting my companion upon my shoulder, we set out at a more rapid rate, and to the greater convenience of both.

Joe appeared to trust me implicitly, and showed much pleasure when I leaped a small stream or some other obstacle, and went flying through the air with him clinging to my neck.

After a time we came to several acres of low, marshy ground, bare of vegetation and covered by a yellowish white deposit. Here Joe slid down from his perch, and picking up particles of this substance, put them into his mouth with signs of enjoyment. When I tasted the stuff I found it to be a natural deposit of salt. By signs, my companion made me understand that it was the only one of its kind in the land, and that all the Kemptonians came here to gather their supply of salt.

Resuming our journey, we swung to the left and soon came to a crude quarry. Here the natives secured the flint with which they used to make their implements and weapons. This they first broke by means of heat and water, then patiently shaped their knives and axes by hand, chipping a block of flint with a tool of the same material, as did our own ancestors in the long forgotten past.

We continued on our way, gradually swinging to the left but keeping the shore in sight, crossing several small streams and passing through a number of small tracts of woodland, where we found wild berries growing. Joe, who walked when we were among the trees, fell to eating this fruit with great gusto. I tried them but found they were insipid and almost tasteless.

As we advanced, we saw smoke rising, at two or three different points; this, Joe gave me to understand, was from the fires of other Kemptonian villages. We did not approach these however, because we could not spare the time to visit and palaver with the inhabitants.

Later we came upon several beautiful little inland lakes. These were all connected with the main body of water, by means of narrow channels. The Kemptonian waters abounded with fish, some at least two feet in length.

The largest of the lakes, which we visited, had an area of perhaps three-hundred acres. We glimpsed another good sized lake in the distance, but did not attempt to reach its shores.

Our travels had now taken us far afield, and when we came to a hill, whose top was perhaps one-hundred feet above the surface of the plain, and the highest point of land I found on the satellite, I mounted it to get our direction, but, owing to the rapid curvature of the tiny sphere, I could locate no land marks.

We continued our advance, Joe riding on my shoulder, until we again came within sight of the main lake, which we had lost some time before. We then fol-

lowed the shore and in about an hour reached the Kemptonian village, where we were received with many demonstrations of pleasure. Judy in particular, showed great joy at Joe's safe return. I do not believe that she trusted me as fully as did her husband.

A feast had been prepared during our absence, and I was required to attend. I would gladly have been excused from this entertainment, but did not wish to offend my kind hearted hosts, who had evidently gone to a great deal of trouble in preparing the banquet. Then again, I was very hungry.

I communicated with Professor Kempton, who was getting insistent that I prepare to return to the Earth, and then took my place at the banquet-board, or rather banquet-ground, the most fantastic festival in which mortal man had ever participated.

Again the Professor called me, making a proposal to which I returned an evasive answer, but which I had no intention of complying with. He desired me to kidnap one of the Kemptonians and take him back to the earth with me.

Such a scheme seemed inhuman and preposterous to me. These people were happy here, living their simple lives. They should be allowed to remain, protected by their mantle of enveloping mist, to work out their own salvation.

True, Professor Kempton intended to allow the native to return, after inspecting and photographing him; still such a proposal seemed cruel and treacherous, after the hearty reception I had received and their display of confidence. Besides, I do not believe that any of the Kemptonians would have survived the journey through space, which had racked me, protected as I was.

We seated ourselves on the ground, in a huge circle, the men on one side, the women and children on the other. The food was piled up on fresh leaves and grass in front of us.

The banquet consisted of roasted meat, baked fish and several varieties of vegetables, chiefly greens, as their root crops were not yet ripe. The meat and fish were salted and well cooked, but the vegetables were flat and almost tasteless.

They also had a very good broth made from goat's milk and meat, which was served in small cups made from a species of a gourd which they raise in great numbers for just such purposes. Cold water, the chief drink of these people, was served in similar gourd cups.

The banquet lasted for over an hour and at its conclusion I began to take leave of my hosts. It was absolutely necessary for me to prepare for my return to the earth.

Already the golden light about us was beginning to dim, the shadows were rapidly becoming longer, and the natives were preparing the night-fires before their caves. Some of the Kemptonians had shed their light grass cloaks and donned garments of tanned goat skin. I knew that a few hours more and this minute world would plunge into the cold and darkness of its long night. I could feel a sharp tang in the air, which, until now, had been warm and pleasant.

Yes, it was time for me to depart, and after making

signs of friendship to these strange people, I turned away, although the entire population of the village, and more especially Joe and Judy, were begging me to stay and to take shelter in their warm cave. I have since wondered what they would have done had they known, that, at the moment they were making their signs of hospitality, my associate in another world, was urging me to carry one of their number away with me, perhaps forever.

Waving an adieu to the assembled Kemptonians, I rapidly retraced my steps over the route I had traveled, when I first landed on the satellite, some twenty hours before. It was necessary, according to Professor Kempton's instructions, to return as nearly as possible to the place of landing.

The light was failing and the air became chill by the time I reached my destination. Indeed, the whole scene was vastly different now.

Quickly calling the Professor, I signified that I was ready to return. He appeared strangely abrupt and asked me no more about the Kemptonian he wanted me to abduct. Instead he gave me a final word of instruction as I lay down on the ground and closed my eyes.

I felt the prickling, as of many needles, while I lay there trying to read what the sounder at my ear was saying. It seemed to be moving farther and farther away; then it stopped; at least I did not hear it again. Then I slept.

CHAPTER IX

Professor Kempton's Notes

JUNE 10th, 8:50 P. M. Have started first phase of experiment. Lawton fell asleep at 8:05. Should begin to show results in about 8 hours. Machines working perfectly.

June 11th, 4:30 A. M. Have not yet heard from Lawton; expected results by this time, but the process may have worked more slowly than I anticipated.

5:00 A. M. Still no report, am getting uneasy, but dare not investigate laboratory end. It might prove fatal to subject.

6:00 A. M. Have been trying to call Lawton for an hour without result; am beginning to fear that something serious has gone wrong.

7:00 A. M. Still no result. Gauges indicate that laboratory end is clear. Should have received reply hours ago.

7:50 A. M. Have just received answer from Lawton, only one word but it means the success of the experiment.

8:00 A. M. Lawton has called again, asking for instructions; reports he has just awakened. Process much slower than I expected.

9:00 A. M. Again communicated with Lawton. He reports several forms of vegetation but no signs of animal life. Vegetation familiar as to form and size but pallid in color. Atmosphere very rare and vapor heavy.

10:20 A. M. Lawton advises that he has found intelligent animal life. He is investigating; will call soon.

11:00 A. M. Lawton reports that he is among a strange race of beings, having human characteristics but odd appearance. Have speech but it is unintelligible to him. He can communicate to some extent by signs.

12:00 M. Lawton in complete accord with natives, as he designates them. They have fire, live in caves and possess crude implements and weapons. They must be of a Stone Age type.

2:00 P. M. Lawton reports presence of domestic animals and fowls, also a limited form of agriculture. Natives must be of a higher type than I supposed. They are very hospitable and friendly.

4:00 P. M. Lawton relates much information about these strange beings. They worship Light. Live monogamous lives and dwell in small communities, total number of inhabitants very small; perhaps about six hundred.

6:00 P. M. Have urged Lawton to continue his explorations in other parts of Kemptonia, as his time there is very limited. Advises that he is starting on trip over the country and that one native accompanies him as a guide.

9:00 P. M. Lawton reports presence of salt and other minerals; also of edible fruit. Finds some forms of bird life. Can find nothing of the animals I employed in former experiments.

11:00 P. M. Lawton has reported to some length, regarding physical features. He is desirous of continuing his investigations, but have advised him to curtail them as I am growing nervous and constantly fear a breakdown in my equipment. This might prove fatal to his successful return.

June 12th, 1:00 A. M. Lawton states he and native are on way back to village. The thought has come to me: Why not have Lawton bring one of the natives back to the earth with him? It could be returned to Kemptonia later.

2:00 A. M. Lawton announces return to village. Have suggested that he secure one of the natives and return at once. He ignores question of native, but expects to attend a native feast before returning.

3:30 A. M. My equipment is not working as well as I desire; have instructed Lawton to secure native and prepare to return at once. The banquet has ended and he is taking leave of natives. States that night is approaching.

4:20 A. M. Lawton reports he is ready to return to earth. Has said nothing about bringing native, but I will not urge that. I am very nervous and only desire a successful termination to our experiment. My apparatus is working very slowly and I am worn out by my long vigil.

8:00 A. M. I am having serious trouble in the manipulation of my instruments, and fear at times that they may stop altogether. A pause of any duration would prove fatal to Lawton at this stage.

10:00 A. M. Had a distressing experience a few moments ago. All my equipment stopped. Fortunately it was not a breakdown, but was caused by the city shutting off its current. I quickly threw in my own dynamo, but it is weaker than the city power and I am

having constant trouble preventing a complete breakdown.

1:00 A. M. The city current has again been turned on and I can hope for a little relief from the constant strain of the past three hours, which was terrific. A few hours more and the experiment should be completed. I pray that its ending be as auspicious as was its beginning.

2:00 P. M. I have had a little relaxation during the past hour and was able to take some food, but only a little, for anxiety has destroyed my appetite.

3:00 P. M. I am again having serious trouble. Several of my circuits have become useless, some are shorted and others burned out. This greatly reduces the power of my equipment and I am fearful for the result.

4:10 P. M. The past hour has been the most dreadful of my life. I am worn out physically and mentally. The gauges indicate that the experiment is almost completed, so I can rest soon. The high voltage circuit has been firing badly. Trouble there will be very serious. I dare not shut off the current for even an instant at this stage, and to make repairs with the power on will be——

CHAPTER X

Conclusion

THE coronor's jury, sitting to determine the cause of the death of Professor Theophilus Kempton, was nearing the end of its labors. The Planeville Town Hall, where its sessions were being held, was packed, not only with the curious and idle of the little village and adjacent country-side, but with the more substantial citizens of the town as well.

During his life, Professor Kempton had been a never failing source of gossip and perplexity to his fellow townsmen, and the abrupt manner of his taking off had in no way abated this.

Planeville from laborer to banker, from housemaid to old Mrs. Van Dusenberry, leader of the towns *élite*, flocked early to the scene of the inquest and remained until the sessions were adjourned.

At the outset it looked like a simple case of murder and arson, with Edgar Lawton, the wandering telegrapher, filling the culprit's role. This supposition became almost a certainty, when Lawton had refused to testify. Later he changed his mind and, for the consideration of his peers, prepared the story, which Attorney Joshua Stebbins, representing the county of M——, New Jersey, in which the tragedy had occurred, styled: "The most preposterous yarn that has ever been inflicted upon a generation of long suffering mankind."

Then certain records and notes in Professor Kempton's own crabbed hand-writing, which seemingly corroborated Lawton's fantastic tale, were found on the little desk in the switch-board room of his laboratory and introduced as evidence.

In order to fully understand what has gone before, we must inspect the abstract of the evidence, as prepared by the court stenographer, and filed as a part of the official records of M—— County, New Jersey.

The first witness called was Isaac Bones, butler and general functom for Professor Kempton. His testimony was brief and to the effect that his employer, accompanied by the man known as Edgar Lawton, had entered the Professor's laboratory at about 4:00 P. M. on June 10th, and that neither had been seen to leave the building after that time.

At about 4:30 P. M. on June 12th, the witness had noticed smoke coming from the roof of the laboratory. He had hurried to the building, which he found filled with smoke. Failing to locate his employer, he turned in a fire alarm.

The tale was here taken up by Fire Chief John Hostettor. The Planeville fire truck had responded to the alarm, reaching the scene of the fire about 4:50 P. M. The firemen found the laboratory full of smoke, with some flames, chiefly among the electrical wiring. Two rooms, one a radio broadcasting station, the other an observatory, were the only parts of the building injured.

The communicating door between these apartments was open. The fire probably originated in the radio room and then swept through the open door to the observatory. The building itself was not seriously damaged, but the contents of these two rooms were a mass of wreckage.

After the smoke had cleared somewhat, the firemen found the lifeless and badly charred body of Professor Kempton. It was lying, face down, under a labyrinth of wires, which at this point entered another room that had been fitted up like a huge radio receiving station.

The latter part of this evidence was corroborated by Chief of Police, Henry Holman, who arrived upon the scene shortly after the fire company.

This witness stated also that, while searching through the receiving room, he had found the accused telegrapher behind some thick curtains, and asleep in what looked like a bath tub.

At first sight he had thought that it was some sort of an artificial figure in the tub, because the prisoner was completely clothed in a thick felt suit.

Lawton was promptly arrested, but when the fire was extinguished, they allowed him to remove his peculiar attire and put on his own clothing, which was hanging on a hook in the receiving room—all except the coat, which was found locked in a cupboard in the main laboratory, to which the prisoner had the key.

The witness searched the coat and found in an inside pocket, an envelope containing one thousand dollars, in new twenty dollar bills. The accused insisted this money belonged to him, stating that he had received it from Professor Kempton for helping with an experiment.

Chief Holman went on to relate that the prisoner appeared to be sleeping soundly when he was discovered, also, that he acted as though he were doped or intoxicated when he was awakened and was continuously muttering to himself and staring at the floor. He never once looked into the faces of his accusers. And that when Lawton finally realized that he was accused of murdering Professor Kempton, he insisted

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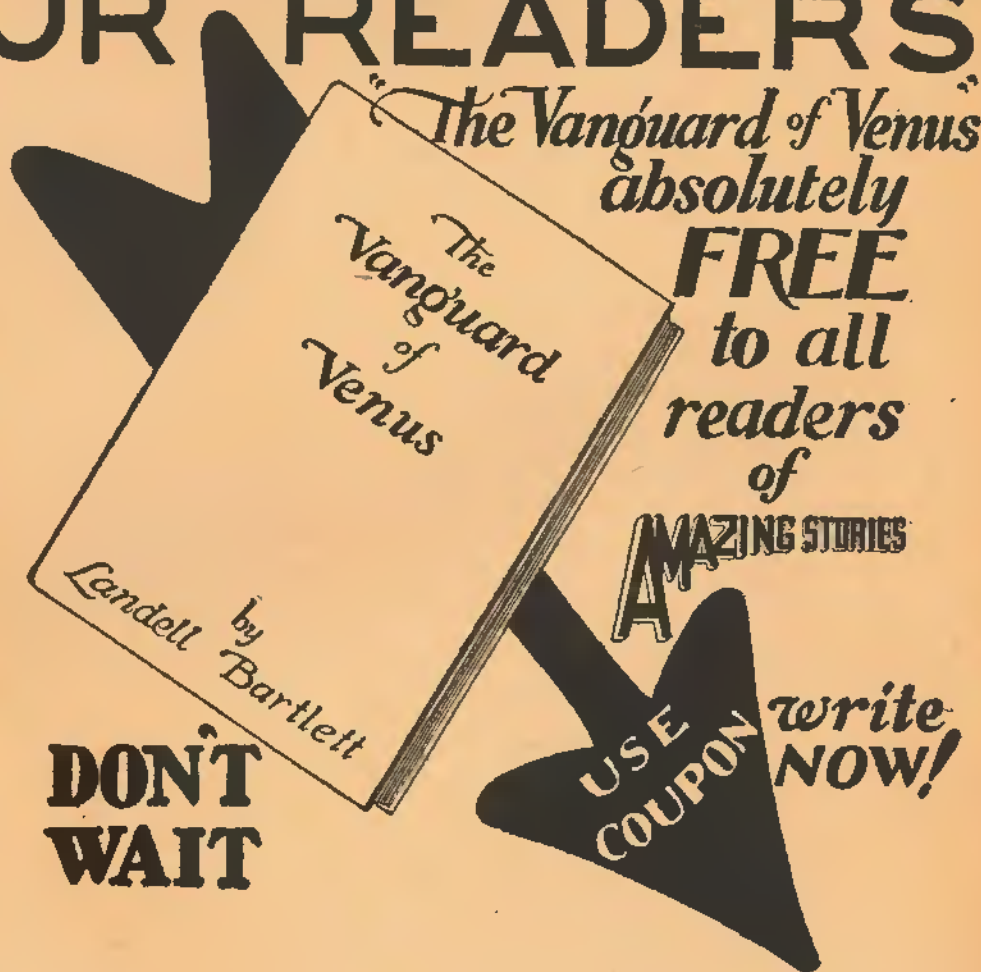
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that the police search the Professor's desk, in the Switchboard Room. When this was done, the sheets of paper containing the scientist's notes were discovered. This appeared to satisfy the prisoner, who came along without further argument.

John Calhoun, Cashier of the Planeville National Bank, testified that on June 9th, Professor Kempton had withdrawn one thousand dollars from the bank, which was paid, by the request of the deceased, in new twenty dollar notes. The bank did not keep a record of the numbers of these notes.

Then came the record of Edgar Lawton's first appearance before the jury. He merely stated then, that he had been engaged to assist Professor Kempton in certain experiments involving much personal risk; for these services he was paid one thousand dollars. He had placed this money in a pocket of his coat and locked the garment in a cupboard, in the Professor's laboratory, where it had been found, at his direction, by the police.

Lawton had declined to state the nature of the experiment in which he had been engaged, but testified that it had been concluded according to his agreement with the inventor, and that he had worn the outfit, in which he was discovered, as a part of the experiment. He also went on to relate that he had signed a paper releasing the Professor from responsibility for any personal injuries that he, Lawton, might sustain during the experiment. The document was later found among Professor Kempton's papers and introduced as an exhibit.

This completed the testimony, taken on the first day of the hearing. The next session was occupied in considering the notes left by Professor Kempton, the statement prepared by Lawton and the cross-examination of the latter by the county attorney, who was present at the request of the coroner.

This examination, which failed to shake the story of the accused, was concluded by an attack on Lawton's attitude at the time of his first appearance before the investigators.

The prisoner replied that he refused to tell his story at that time, merely because it was so strange that he could scarcely believe it himself, and that he feared, therefore, that he would be considered insane if he related his experience.

"Then," thundered the prosecutor, "why do you tell this unbelievable, preposterous story now?"

"Because it is the truth," Lawton answered.

The condition of the body of the deceased failed to reveal any cause other than an electric shock, that might have contributed to his death. There was no doubt but that the body had been subjected to the action of a powerful electric current.

Whether the shock occurred before or after

death, it was absolutely impossible to determine.

The concluding and decisive testimony was given by Warren Kelly, Manager of the Planeville Power and Electric Company.

"There is no doubt," Mr. Kelly stated, "but that Professor Kempton came to his death through contact with a high voltage electric circuit. This occurred when the deceased, for some unknown reason, attempted to change fuses on a high voltage charged line, without first shutting off the current. Why he tried to do this I do not know, but as he was not a careless man, there must have been some vital reason for his action.

"In support of my statement," the witness continued, "the Professor's body was found directly beneath the fuse box, of a high voltage line.

"And in the dead man's left hand, this burned-out fuse was found," and he held up a fuse with its small piece of metal melted by heat. "On the floor, only a few feet away, was this unused fuse, which he dropped when he fell.

"These fuses, you will see," holding both up in sight of the jury, "are fitted with a small rubber tip or grip, and if sufficient care is used, may be removed from live wires without contact, although it is dangerous practice.

"It is obvious that Professor Kempton removed the damaged fuse in safety, otherwise it would have fallen to the floor or remained fixed in its place.

"But," Mr. Kelly concluded, "in his haste to insert the new fuse, his hand came in contact with a live wire, which could not fail to cause instant death."

Warren Kelly was well and favorably known in his community, both as a man of integrity and as the last word on things electrical. Therefore his words had much weight with a jury composed of his fellow-townsmen.

And when, after due deliberation, the coroner's jury returned their verdict, it was, much to the chagrin of Attorney Stebbins, that the deceased had come to his death by "An act of God," and recommended that the prisoner, Edgar Lawton, be released.

Mr. Lawton, although kept confined in the Planeville jail, possessed a laudable ambition to collect his thousand dollars, still in the custody of the police, and to depart for the wide open spaces of his native west.

A few days later Edgar Lawton was released from the custody of the Planeville Police Department and the thousand dollars were turned over to him, by order of the court.

He also received a gentle intimation, from his late custodians, that a long stay in the vicinity of Planeville might prove unpleasant.

This hint was unnecessary, for Mr. Lawton no sooner recovered his liberty and secured his sequestered bank roll, than he purchased a ticket for a quiet spot in the far West and has not been heard from since.

THE END

"Discussions" this month begin on page 658.

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THE INTELLIGENCE OF ANIMALS

Editor, AMAZING STORIES:

To begin with, I have several questions to ask which have puzzled me for some time. They are: Why are there no trees on the prairies of western Canada when they will grow there so well?

Would you weigh anything if you went to the center of the earth?

Can an image be seen more clearly in a mirror if a light shines on it without reflecting to the image?

Can a spectroscope tell the materials found on a planet?

If you travel from the earth faster than the speed of light, will you see the earth revolve in an opposite direction than if you were traveling more slowly than light?

Why not have a brief synopsis of the life of the important authors in this magazine, with their photographs if possible? I often like to know something of the authors when I read their stories, and I am sure others would also.

About your stories:

The "Second Deluge" is one of the best stories I have ever read. It is gripping, immense, and depicts man's animalism perfectly.

"The Invisible Man" was very good and shows in an amazing way the panic which would occur if a man could become invisible.

I have enjoyed nearly all the stories in your magazine. I think you should continue "Hicks' Inventions with a Kick" and other funny stories. I thought they were excellent.

In SCIENCE AND INVENTION you are conducting a questionnaire as to whether animals think or not. I think some do and others don't. I think dogs do more thinking than any other animal, with monkeys second. These, in my opinion are about the only animals which think. Most species have had to think sometime in their evolution, for how could they have built burrows, hunted as they did and performed all sorts of other things. They may have thought at some time but do not do so now.

I wonder if you have the April and June of the first issues? I would like to get them if you have. Please get your artists to draw pictures which do not give away the story. This spoils them. I enjoy the pictures and always study them.

Leave the magazine just as it is. It is perfect, in my estimation.

HOWARD J. HEWTON,
106 Glen Rose Ave.,
Toronto, Ontario, Canada.

(Do you not think that the prairies of western Canada are so exposed to heavy winds and blizzards that trees do not grow there? There are lots of trees on the mountains of Canada. Presumably at the center of the earth, no weight would be discernible, as you would be drawn with practical equality in all directions, but mass would be there and you would have all the features of momentum and inertia. To see an image in a mirror, light must shine upon the object. Sometimes it seems as if an object could be more clearly seen when light is reflected from the mirror upon it. You can try this very nicely in sunlight for yourself. Physiology comes in here, for if the sun shines directly in your face, while you are looking at the reflection in the mirror, the pupils of the eyes will be contracted, and you often will see better by turning your back to the sun, and letting the light be reflected from the mirror back to your face. But from the standpoint of physics the stronger image will be given by letting the light shine first upon the object.

You are not the only one of our readers who would like to have a synopsis of the lives of our authors, but we want to give a good lot of stories in our magazine and do not like to reduce the space devoted to them. The Editor of SCIENCE AND INVENTION, we think, would like to hear from you about his questionnaire. Write to the publishers for any back numbers you want, they have some on hand.

The spectroscope depends on light waves of various colors and for the identification of elements, the substances have to be heated to incandescence so as to radiate light. A cold planet cannot be analyzed by the spectroscope. The traveling faster than the speed of light is taken as an intrinsic impossibility. If one traveled away from the earth as you describe and could see by the light reflected from the earth, it is fair to say that the earth would seem to rotate in the reverse direction.—EDITOR.)



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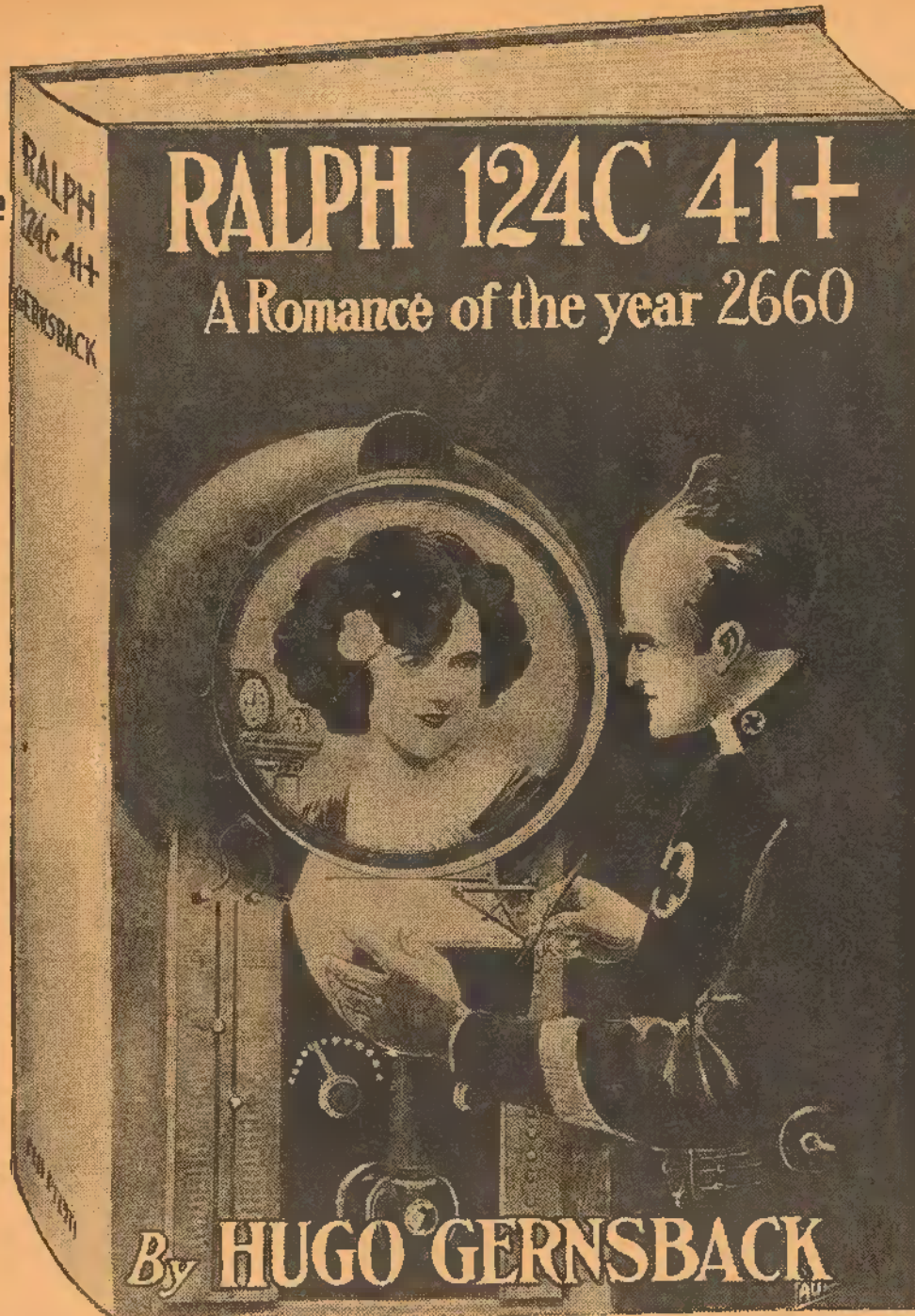
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A CRITICISM OF "THE BLUE DIMENSION"

Editor, AMAZING STORIES:

I have been a reader of AMAZING STORIES for some time and consider them unusually good, but *The Blue Dimension* by Mr. Flagg sounds a bit impossible, since all matter must occupy space regardless of other vibrating phases. What I mean is that a building in this "Blue Dimension" occupies a space that would be the center of Broadway. Anyone crossing the street there would collide with it, because they could not see it. The building though being in another dimension would still be a solid form and therefore some one would collide with it because of its invisibility. I am not a scientific man and perhaps there is something I have not taken into consideration. If so, kindly set me right.

J. F. MURPHY,
2021 N. Edging Et., Philadelphia, Pa.

[We publish your letter on account of its interest. It hardly needs comment. Impossibilities sometimes run up against inconsistency and perhaps Mr. Flagg has committed this error.—EDITOR.]

SOME SMALL BRICKBATS, BUT MUCH WARM APPRECIATION ALSO

Editor, AMAZING STORIES:

I wish to apologize for any "brickbats" I may throw at you and your very excellent magazine in this well-meaning (?) letter.

But before I start in on you and yours, let me say a word in regard to those readers of AMAZING STORIES who criticize your artist, Paul. Paul is the scientific artist *par excellence*. In your April issue, one W. E. Moore lists a few slight "slips" made by Paul in his work in AMAZING STORIES. I would suggest that he take a look at the cover illustration for the story, *Below the Infra-Red*. Anyone who can illustrate so perfectly and clearly the intricate apparatus described, is exempt from all criticism. I will admit that Paul's conception of the human physiognomy is rather strained, but as I mentioned before, Paul is a scientific, not a collar-ad, artist. But enough of this. If Paul should see this letter, he would probably get a swelled head, and I wouldn't blame him a bit.

I have been looking forward to another cover contest in your magazine, but I was not anticipating the brand of contest which you finally announced. I had been wishing for another "write a story around this picture" contest, but as the contest for a symbol for the word scientific interests me, I am not entirely disappointed. I intend to enter the next story contest, which will, I hope, be announced soon.

The story which interested me most in the April issue was the *Return of the Martians*. It is even better than its predecessor, *The Retreat to Mars*. Mr. White has paved the way nicely for another sequel.

Next in line comes *The Miracle of the Lily*. Clare Winger Harris was, I believe, one of the prize winners in your last contest. A worthy author. Let us have more from her pen. Soon.

In referring to what I have already written, I find that I have not thrown any of the "brickbats" I have already apologized for. Well, here goes.

In *The Ancient Horror* the monster, or its forebears, are supposed to have been confined in an immense cavern caused by a cataclysmic cave-in which occurred during the Mesozoic Period, the period of prehistoric monsters. Well and good. But what I do not understand is the source of the creatures' sustenance during its incarceration. Granite perhaps? Or coal? I do not consider it possible that green vegetation would survive in such a cavern, and provided it did, would a sufficient quantity be grown for so large a carcass? You may, perhaps, be thinking, "there were fish in the waters of the cavern." There are fish in the waters of Mammoth Cave, but they are very few. Not enough for a dinosaur. I am open to suggestions as to what he ate.

And another flaw. Science states clearly that these prehistoric monsters thrived in a hot climate. Yet, the author states that the water is very cold, slightly above freezing.

In another story, the Yeast Men are shot out of guns into the enemy country. The author mentions that the Yeast Men move forward in the direction in which they face. How is it that the Yeast Men all fall to the ground facing in the right direction? In actual practice, this invention would prove a boomerang.

The Pterodactyl, in *The Way of a Dinosaur*, after seizing its prey, is supposed to rise again with its burden, barely clearing the treetops, where the Tyrannosaurus is hidden. A Pterodactyl cannot rise from the ground. It must climb a high cliff or hill, usually a cliff; for it made its home in a cliff. It is for this purpose that the "fingers" on the wings are intended. When it reaches a sufficient height, it launches itself into the air. After once launching itself in this manner, it could glide for long distances, not fly.

Last on the program is Baron Münchhausen. After his second journey (or should I say fall), through the moon via the two connecting craters, he rises 100 feet into the air after issuing from the crater. This would not happen unless the crater was situated in a valley more than 100 feet below the average level of the moon. He could not have fallen "up" further than he descended. On the contrary, he would have barely come to the edge of the crater.

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Well? Was my apology necessary?

In closing my letter I would like to suggest that the winning design in your cover contest be taken as a standard cover, to be used every month in AMAZING STORIES. I agree with Mr. R. F. De-Britt when he says that he must get his copy surreptitiously for fear of being observed by some business acquaintance, who would thereby doubt his business sagacity. It is the same with me. Although I am but seventeen years of age and have not the honor of a business acquaintance, still I feel that others comment on the "trash" I read when they see the cover of the magazine. That is the chief reason why my grandparents do not like the idea of my reading it.

Several months ago I had the opportunity to induce a friend to read AMAZING STORIES, but he was forced to discontinue it by reason of his parents dislike of the cover illustrations. He thought it was "trash."

Also I think it would be a good idea to change the name AMAZING STORIES to Scientific Fiction Magazine.

I hope my suggestions and criticisms meet with your approval and I assure you of my continued patronage, in any and all circumstances.

RAY PALMER,
3215 Mt. Vernon Ave.,
Milwaukee, Wis.

[You apologize for "Brickbats" in the beginning of your letter but it takes you some time to get at them. Perhaps the monster in the "Ancient Horror" was like the Texan Horned Toad, which was supposed to have been walled into a corner-stone of a building for many years without dying. Then you speak of what a Pterodactyl can do. We really do not know what he could do and there seems no immediate prospect of our ever finding out. You'll find pretty good science in Baron Münchhausen, even if you don't like the way he tumbled through the hole in the moon. Did you note the author's reason why he fell further the other way? The sun's attraction aided one way and retarded the other way.—EDITOR.]

ACTION OF THE EARTH'S ROTATION ON MOVING BODIES

Editor, AMAZING STORIES:

I have been a regular reader of SCIENCE AND INVENTION for years and liked it best of all magazines I have ever read until one day in January this year, when I changed my mind.

I have seen AMAZING STORIES mentioned many times in SCIENCE AND INVENTION, but did not know what it was all about, and because I do not read any stories of any kind unless they are of a scientific nature, and thinking that AMAZING STORIES were not scientific, I paid no attention to them. While passing a newsstand one day, *The Interstellar* appearing on the cover illustration of the February 1928 issue, attracted my attention, and after reading the Editorial page I bought the magazine immediately.

I have not missed a single copy since and never expect to. I like AMAZING STORIES best of all.

My only complaint is this: I certainly do not like H. G. Wells' stories and wish you would print less of them, if any. His "stuff" in AMAZING STORIES is what static is to radio music. Of his stories I have read, *Pollock and the Porroh Man*. That is one that is really worth reading, and it is hard to believe that he is the author of it, judging from his other stories. I read *The Story of the Days to Come*. Well, it's a good love story, if anybody likes love stories. What we want is scientificity. I read part of *When the Sleeper Wakes*, and when I got to where "Graham" got out of the cataleptic stage, I was almost in the lethargic stage myself and quit reading it. He can outline something in detail and take up several pages, and in the end there is nothing said. I believe the story *When the Sleeper Wakes* would be a good story, were it "boiled" down. If you must print his stories, print the short ones. I would suggest that you give him a five years' vacation.

That is all for "Wells."

Now to tell you the stories I like. I like interplanetary stories, and will welcome everyone you print. *Baron Münchhausen's Scientific Adventures* is a wonderful story; it is very interesting all the way through. The lies and self-praise of the Baron makes it all the more amusing. I do not know how far he is going to travel, but I hope he visits all the other planets and their satellites before his journey ends.

Give us more on hyper-space. I am trying to learn something about it. Not too many illustrations, and by all means do not mix the advertisements with the stories, as is the case in SCIENCE AND INVENTION.

I like the Discussions. They nearly double the value of the book.

I have read in a certain popular scientific magazine that if a train moves in a western direction, it weighs more than when it is standing still. And if the same train moves in an eastern direction, it weighs less, because in the first case it is moving in an opposite direction to the direction of the rotation of the earth (since the latter turns from west to east), and therefore is slowing down its real motion in regards to space, which brings it nearer to rest than when "standing still" and traveling with the earth. In the latter case, when the train is moving east, it is moving with its own speed plus the speed of the rotation of the earth, which has more of a tendency to throw it

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This department is conducted by Mr. C. W. Palmer. Its purpose is to answer the difficulties of our readers. The value in which the "fans" hold this section can be better realized when one considers that there are over 5,000 letters received from readers each month. Naturally only the more important ones are printed in RADIO NEWS.

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out into space, on account of centrifugal force, causing it to weigh less. That seems clear to me. But tell me, how can the western rail of a railroad that runs north and south, wear out quicker on account of the motion of the earth from west to east, since the inertia of the train has been overcome by the earth's motion, and, since it requires as much power to stop a moving body, as it does to start it. How can an object "lag" behind? Will you please explain this phenomenon.

PAUL H. MILLER,

702 East Chestnut St., York, Pennsylvania.

[We wonder what the editors of SCIENCE AND INVENTION will think when they hear that you prefer AMAZING STORIES to it. We are glad that you think that *Fallock and the Porroh Man* is good. It is a remarkable study of ethnology and psychology. Your comments on other stories speak for themselves and are quite interesting. We agree with you about the "Discussions." Our correspondents do not write until they have something to say, which is more than can be said for many letter writers.

The problem of the moving train is simply this. If its motion is super-added to that of the earth, the centrifugal force acting upon it will be greater than if it is stationary on the surface. A body weighs less at the equator than at the pole. If a railroad train was on the equator and went in the direction opposite to that of the earth and at the earth's velocity at the equator, it would weigh the same as at the poles, and if it went from west to east, it would lose weight. You seem to have the idea clearly in your mind. Now if a train is running north, its speed towards the east, due entirely to the earth's rotation in that direction, is constantly decreasing as it goes north, because of the increase of latitude, so this naturally presses it against the western rail. To use your own words, the western rail of our railroad acts to stop the motion of the train towards the west and that wears out the rail. The Lorenz-Fitzgerald contraction may fairly be taken as a curiosity in the Einstein theory. According to it a body moving in any direction is shorter in that direction when in motion than it is at rest. Thus, the sleeping passenger in a night coach would be shorter when the train is in motion than when it is at rest, and when motionless.—EDITOR.]

DIFFERENCE OF TIME AND THE DATE LINE

Editor, AMAZING STORIES:

I read with interest the letters and editorial comment published with AMAZING STORIES.

Sometime ago there was a discussion as to saving time by traveling east faster than the revolution of the Earth.

The maximum difference of dates in crossing the International Date Line is one day, regardless of your speed or number of trips around the Earth in one day. Suppose you start from a point just west of the Date Line and travel east at 6,000 miles per hour (on the Equator). You cross the Date Line into the beginning of May 1, arrive at your starting point at 4:00 A.M., May 2, and cross the Date Line at 4:00 A.M. into May 1.

Einstein speaks of warped space near material objects such as the Sun or Earth, and we may conceive such a condition though we cannot imagine it. An attempt has been made to image the sun as falling freely in space, the planets following along grooved paths, somewhat like spiral paths around a column. But this is not true, as the planets revolve around the Sun in different periods, and the more distant planets would be left behind as the sun fell down its path. All the planets continue to revolve around the Sun in nearly the same plane.

Einstein discussions seem to confuse the measuring instruments with the thing measured. We have it stated that a watch traveling at the speed of light would remain at the same time. It would so appear to an observer on the Earth, but if the watch returned in two hours the observer would see that the watch had registered two hours.

An observer with infinite vision and speed greater than light could leave the Earth and see our past unroll itself, but even if he returned with infinite speed he could not recover one second of the past. That would be confusing the picture of an event with the event itself.

A moving picture is exhibited, and the spectators at different distances and with different sensory nerves do not see a particular event at the same time, but the event occurred at one and only one instant of time.

We may expiate past errors but we cannot erase them, otherwise there would be no Law of Cause and Effect.

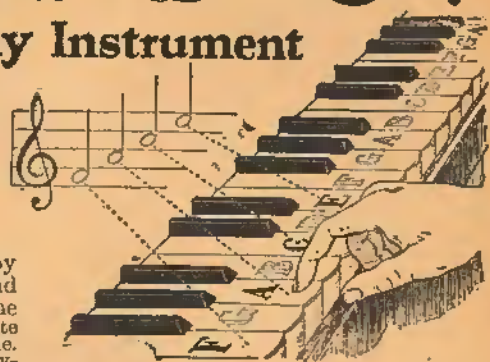
C. S. STANWORTH,

18 Pelham Place, Norfolk, Virginia.

[Dr. Mentroso is responsible for a good deal of discussion and has done very good work in making people delve into the question of difference of time which, as we have already stated, has been an enormously important thing in navigation. The construction of reliable chronometers, which gave the difference of time to sea captains, usually reckoned from Greenwich, England, solved the problem of navigation after centuries of waiting; the problem of the determination of longitude at sea, for many generations racked with perpetual motion, the squaring of the circle, the tri-section of an angle and other questions as one of the insoluble problems of mankind. To those who have not made a special study of the subject, the doctrines of Einstein seem obscure and unintelligible.—EDITOR.]

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Complete Instructions For Building a Television Receiver

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So, fans! Dig out the old soldering iron, the bus bar and the rest of your paraphernalia and get to work on the latest hobby. Build yourself a Television Receiver.

Of course, Television is far from perfected. It is still in a most elementary stage. There is little use in trying to gloss over the truth. But a start has been made and it remains for the "fans" to do their share, as in radio, in helping to develop the new art.

In the last issue of TELEVISION there are full instructions from which you ambitious enthusiasts can construct an efficient experimental set. With this set you will be able to receive some of the Television programs now being broadcast. Experimenting will continually improve reception. Get your copy of this new issue today! Start to work on your Television tonight! Be the first in your neighborhood to have a Television set. The old "fan days" are here again. Don't miss the fun!

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How to Build a Television Receiver
New Jenkins Radio Movies
New Belin Photo Transmitter
Vacuum Cameras to Speed Up Television
Infra-Red "Eye" Sees at Night
Valensi Television
Connection of Photo-Electric Cell

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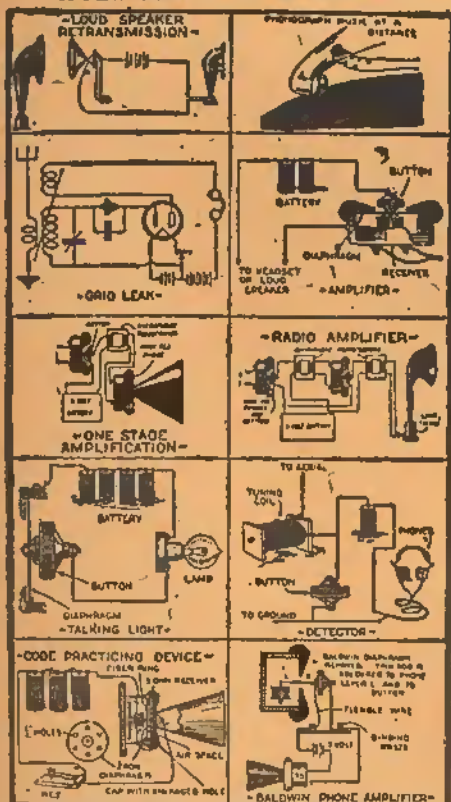
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Editor, AMAZING STORIES:

In the "Discussions" column of your July, 1928 issue a certain Harold S. Farnese has seen fit to point out several grammatical errors in your previous issue. In the hope that, through your magazine, Mr. Farnese will see this letter, these few lines are typed.

For you must understand, Farnese, that even the best of us will inadvertently get over on the haw side of the median line in our syntax sometimes, and I am sure that the authors of the stories you criticize will be so grateful to you for setting them right that they will be very glad to again see your name in print.

I would like to tell you a little story, Farnese, in the humble hope that all of your busy tribe of professional grammar sharps and pestiferous pismires will profit by it.

I served my apprenticeship in the sanctum of a surly editor who was long on ideas but short on grammar. One day a putty-headed pedagogue blew in—one of those mental microbes who spend minutes thinking what to say and months learning how to say it. He had discovered a grammatical error in an editorial leader and was gasping like a duck with its bill full of dried mud.

"Mistah editor," he exclaimed, "I find a grammatical ehwah in your papah this morning."

"The h—I you say!" quoth the editor, who could see no harm in taking the name of the devil or of his dominions in vain. "What else did you find in the article—any ideas?"

The professor assented, and the autocrat of the sanctum said in a voice that made the bristles of the paste-brush curl: "Well, sonny, language is the vehicle of thought, and if I have succeeded in constructing a vehicle that will carry ideas into the head of such a blanket-blinded idiot, such an irremediable ass as you are, I'll get it patented."

Do you understand, Farnese? Can you discover the beautiful moral of the story without a diagram? Right here, Farnese, may I present you—as a worthy representative of a considerable contingent of smart Alices—with a slug of advice that is more precious than fine gold? Treasure it tenderly and transmit it as a priceless heritage to the Farneses of the next generation! Whenever you encounter a grammatical error riding gayly along on a train of thought, "Kill it and go on." Remember that even the good Homer nods sometimes. If you aspire to be really useful, go sit on the bleaching board and watch an amateur game of baseball, bestride a dry goods box and save the country, spit at a mark, preach prohibition, play croquet with a hevy of old maids, switch a cane—do anything, except play grammar sharp.

Another thing, Farnese, and character this in your memory: Do not take your pen in hand and write letters to a busy editor just to display your cuteness. The exasperated editor may expectorate on you and throw you.

But right here a question, Farnese: How do you get into your clothes? Do you go into them head first, then pose before an amorous looking-glass with your mouth full of pins; or do you insert yourself one leg at a time, then make frantic swipes under the bureau for collar buttons, while the circumambient ether assumes a cerulean hue? This question is important. In the unlamented erstwhile, the last of the Apostles was bestride the editorial tripod of the *Newark Evening News*. One day he sorted out of his mail a kick almost as silly as yours. He had been up late—listening to the radio—and his liver was a trifle out of plumb. He jumped on that kicker and recalcitrated in return until the air was full of fragments of flesh. The next day he found in his sanctum a beautiful damosel with a chilled-steel glitter in her bright blue eye. He opined that perhaps she had called to praise his latest "Sunday Sermon" and present him with a pair of hand-worked slippers several sizes too small; but he was banking on the wrong card. He thought maybe she had brought a bunch of blue forget-me-nots to lay on his shrine, and to say that she had worshipped at a distance until her young heart hurt her, so she could stand it no longer; but he was mistaken. She had dropped in to inform him that she was the party of the first part to the controversy aforesaid, and to lament the untimely demise of chivalry.

Great God, is it possible that people will give precious time to such trifling—with the mighty Universe yet to be explored, the secret of man's origin still enshrouded in mystery, his destination a mere matter of speculation! Let grammar sharps say what they will, that phrase approaches nearest perfection which conveys, with most perspicuity and least jaw-labor, an idea from mind to mind. Mortal man cannot afford to sit down "in the conflux of two eternities" and spit hairs. Life is too real, too earnest, too valuable to be wasted on the idle subtleties of word-mongers. I'd rather have Samian wine served in a gourd, than putrid vinegar in a goblet of gold. The purists of the present are to progressive thought what the scholastics of the past were to religion. They reduce the mind to a soulless machine which grinds no grist for the hungry multitude; they blast the fruitful fig tree with the curse of their foolish criticism; they substitute manner for matter—esteem the wretched vehicle above its price-less freight!

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A LADY READER'S CRITICISMS

Editor, AMAZING STORIES:

It is the letter of Mrs. H. O. De Hart in the June issue of your publication that is the cause of my writing my little say. For more than a year I have been a reader of this magazine, and this is the first time I have seen a letter from a woman reader. In fact, I was somewhat surprised as I had believed that I was the only feminine reader of your publication. However, it is with pleasure that I note that another of my sex is interested in scientification.

I feel that I owe my intense interest to this type of fiction to my mother, who from my baby days endeavored to develop my imagination. When I tired of my dolls, she would suggest that I play with imaginary kittens, dogs and children of my age, and you can see how easy it was for me to progress from kittens to more imaginative subjects. It seems as if, as early as I can recall, I was reading stories such as the tales of Edgar Rice Burroughs, Jules Verne and H. G. Wells. The *Argosy All-Story* with its "different stories" came to my notice, and I was greatly elated when you reprinted *The Moon Pool* of Mr. Merritt's from that magazine.

Several months ago I noted that a reader of *AMAZING STORIES* requested that you also reprint the *Blind Spot*. I can't recall the two authors' names and I herewith add my entreaties for the same as I could imagine nothing nicer than to read that story once more. I might also suggest that you reprint *The Ship of Ishtar* (I believe that is the title), which appeared in the *Argosy* a few years ago, and I also believe is by Mr. Merritt. Alas, my memory for titles or authors' names is not very good, but I recall the story and I am sure that the readers of *AMAZING STORIES* would enjoy this story as much as they have other tales by the same author. (If I am wrong about the author, please correct me.)

As I have said before, I am a constant reader of scientification, although I regret that from time to time I miss an issue or so. However, I have read the magazine in as many cities as I have read issues, from Miami to New York, and from Cleveland to Birmingham, traveling as I do with my husband almost constantly. My only sorrow is that I can not as yet interest him in the magazine, but I have not given up yet. Above all, the female of the species is persistent! Am I right?

Now about the magazine itself. Naturally, there are stories that appear from time to time that I do not care for particularly, but I have not found a magazine yet, that did not contain stories I do not like. I know other people must enjoy these stories, therefore I shall say nothing about that. The type of stories I enjoy most are those that deal entirely with scientification rather than the detective and stories of that ilk. However, I do note that the stories I like most are those that receive favorable criticism from the majority of readers, while those I do not enjoy are those that usually receive the slams.

Lots of people have commented upon the illustrations of Mr. Paul, and most of them seem to agree that his drawings are quite vivid and most often in keeping with the stories, but I do wish your covers were not quite so lurid. In the first place, your readers do not need these over brilliant covers to recognize their favorite magazine, and on the other hand strangers more often would hesitate in picking up a magazine so amazingly bound. He could expect nothing but trash in a magazine so glaringly covered.

I would suggest that Mr. Paul restrain his imagination slightly in dealing with the cover. Why not design a more subdued illustration in more sober colors, one that could be used monthly, somewhat in the manner of the *Golden Book*. I think that a solid color, a quiet shade of blue or green or something like that could be used with the name, etc., of the magazine printed upon it, with, if necessary, some mechanical or scientific form pictured as one might use a symbol or crest.

I truly wish you would do something like that. I always do feel a little sheepish when I carry my new issue of *AMAZING STORIES* through the lobby of a hotel, and I have been told that others suffer in the same manner as I do under a barrage of eyes, as they try to sneak unnoticed with that blatant pictorial atrocity under their arm. And were we to have a vote then I know that almost every reader of *AMAZING STORIES* would agree with me fully. Please, please tone Mr. Paul down.

In closing, I want to say that I am thankful for the publication of this magazine, my greatest objection being that I wish it contained more stories per issue.

Mrs. L. SILBERBERG,
Augusta, Ga.

[There have been so many expressions of admiration for Mr. Paul's work, that your letter is certainly what is called "something different." We are very glad to hear from one of the fair sex and would be glad if more of the weaker (?) sex were contributors to our Discussions Column.—EDITOR.]

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SOME CONSTRUCTIVE CRITICISM

Editor, AMAZING STORIES:

I am only nineteen and have but a high school education. Nevertheless, though I am by no means an able mathematician, I wish to express some opinions on the much discussed fourth dimension.

I do not think the fourth dimension should be considered as a second plane lying alongside ours, as Wells has it in *The Plattner Story*. To resort to Bob Olsen's favorite method of reasoning by analogy, two lines intersect in a point, two planes intersect in a line, and two solids, or three-dimensional planes, therefore, one of them extending into the fourth dimension, would have only a mathematical plane in common. It would be impossible to move from one part of the earth to another, by motion solely in an intersecting plane.

Moreover, since a line contains an infinite number of points, and a plane contains an infinite number of lines, and a solid an infinite number of planes, so four-dimensional space must contain a truly infinite number of three-dimensional solids.

It is quite conceivable to me that the phenomenon of time is caused by the motion of our plane through the fourth dimension. But if it moves in the fourth dimension it is probably revolving around some central body. If it does that time would be an endless cycle of cause and effect, repeating itself again and again. Every man would have lived the same life an endless number of times. Tomorrow would be a part of the infinitely distant past. The idea is as bewildering as *The Astounding Discoveries of Dr. Mentiraso*.

I see that many readers object to the kind of paper you use, and to Mr. Paul's wonderful and fascinating covers. I like both. The other magazines I read (*The World's Work*, *Literary Digest*, *American*, *Saturday Evening Post*, etc.) are all printed on smooth white paper, and are more tiring on the eyes than AMAZING STORIES. Now that the size of the page has been increased, I hope that the next improvement will be an increase in the number of pages.

If you wish to have another prize contest, you might somehow get a title and have the stories written to fit it. Such headings as *The Moon of Doom*, *The Time Machine* and *The Land That Time Forgot* suggest dozens of interesting stories.

The suggestion that you have the constitution of the science club drawn up and published is a good one. If dues are paid and the organization has enough money, the members might suggest original experiments, one of which could be performed each month in the laboratory of some member, and the description of it published in the magazine.

The Flowering of the Strange Orchid, suggested a story. *The Thunder Beast*, that I read in *Boy's Life* seven or eight years ago. It was a powerful story and might do for a reprint. I hope you reprint the *Metal Emperor*, or at least, put in a question as to how many of our readers get SCIENCE AND INVENTION. Also I suggest *The Ship of Jhtar*, by Merritt, and Poe's *Narrative of Arthur G. Pym*.

And last, I welcome the QUARTERLY.

JACK WILLIAMSON,
East Star Route, Elida, New Mex.

[We had occasion to speak to an astronomer who is in the service of the United States Government, about the fourth dimension and the Einstein theory, and the lady, for she was of the fair sex, remarked in the most casual way, that she didn't understand Einstein. So we advise you not to take the fourth dimension too seriously. Consider it at present, a mathematical conception, but one which has certainly done its part in AMAZING STORIES in some excellent tales. We are glad to get your suggestions for reprints and we have a great many in mind and in prospect, but we want to preserve a good balance between original stories and reprints of what may be termed classics.—EDITOR.]

FROM A NEWFOUNDLAND READER

Editor, AMAZING STORIES:

Rather slow returns to your letter of February 15, which chased me up from Paducah, Ky., being, for one thing, now 150 miles by dog team north of the nearest railhead. But I wish to state right now that I have enjoyed AMAZING STORIES almost from its inception, though separated from it for the last six months, and certainly welcome it in its new form—I hope my remittance isn't too late to get the January issue—also, that my brother may yet relay me some of the winter issues from Chicago or Miami.

In the QUARTERLY, I trust, you will conserve the best things from the Monthlies, as you did with last summer's ANNUAL. To tell the truth, I had a certain feeling that some of the last issues I saw were (necessarily) being diluted a bit to keep up with the demand for frequent issues. *The Colour Out of Space* struck me as one of the most careful and workmanlike things you have published—barring a few "revivals" from H. G. Wells, et al—and quite redeemed an otherwise rather mediocre issue. And *The Moon Pool* was about as originally conceived and executed as anything I have read in a long time.

With somewhat the guilty feelings of an adult caught enjoying a circus, I will admit that I also get quite a kick out of Edgar Rice Burroughs at times. My ANNUAL happened to arrive—and was read—while I was having certain portions of my face transferred to other portions where they

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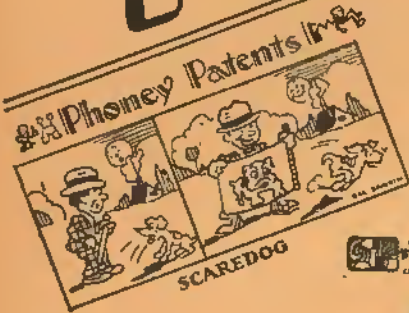
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never expected to grow. That, and the fact that I had been doing a bit of surgery myself in the previous year, made me rather keenly interested in both the possibilities of his *Master Mind of Mars*. The impossibilities may some day be reduced to the possible, at that. In the issue of the *Journal of the American Medical Association* that I received yesterday, there is reported the successful removal, in two cases out of five attempted, of an entire cerebral hemisphere, in certain cases of deep-seated brain tumors.

I also note that you have a "Doctor" as your Associate Editor. An M.D., may I ask? I hope that if so, he will be a bit partial to publishing stories more or less based on our profession.

A fool idea, but I would have liked to have a try at the "picture contest story" of last year—that really brought out some good things. But being then the sole interne of a ninety-bed hospital, I didn't find time to work out the yarn I had roughly planned—and suppose it is too late for any such thing now, although nobody seems to have taken the point of view I intended, telling the story of the liner.

But the hour is late—or rather, early; being 12:30 A.M.—so with all best wishes to you and **AMAZING STORIES**, I shall hereby sign off as
KANSOM WELLS, M.D.,
St. Anthony's, Newfoundland.

[We find this letter from Newfoundland quite breezy. He is not so very far from the landing place of the "Bremen" airplane just north of the St. Lawrence River. Your subscription to the *QUARTERLY* will be taken care of. The *QUARTERLY* is a sort of compromise. Many people would like to have this magazine appear twice a month while others think that would be too frequent. The four issues of the *QUARTERLY*, which have more pages than the *Monthly*, make the total represent almost two copies a month in quantity and they are kept entirely separate, so that the readers are perfectly free to take only the one or to take both, according to the amount of reading they want. The "doctor" on our editorial staff is not an M.D. but a Ph.D. and LL.D. We would be very glad to have our editors read any story you write. Of course we feel that we are through with the Red Folk. Some excellent work has been done for us by physicians.—EDITOR.]

HOME BINDING AMAZING STORIES

Editor, *AMAZING STORIES*:

I have just finished the June issue of your magazine and have enjoyed it quite as much as any other issue. *The Blue Dimension* interested me particularly because I have an inclination towards kindred subjects.

I also read with interest the discussion column. This is the first time I have ever written a letter to you but I had to write and tell you how much I enjoy your publication. Of course some of the stories are far fetched although interesting, but I believe that this is due more to the reaction of the excitement of newly opened fields of scientific literature, than to the indiscrimination of the authors. *The Golden Girl of Munan* in the June issue was more in the classification of weird stories, I think, than it was scientific. But it was interesting. I have an idea for a story that I think would be rather good, but I am half afraid to write it. I have studied science a little, more particularly chemistry and physics. I have also read a great many books, but none of them have as yet taken the idea which I have in mind. But someone no doubt will hit upon it and while I am thinking of it he will write it, and I will grind my teeth in chagrin. I have invented a rather novel idea in the way of keeping the annuals that I like best. After reading all the stories, I cut out the serial and save the chapters until the story is complete, then I make two covers of heavy materials and bind the serials within them. On the front cover I print the name of the story, author and its classification according to science, plot, romance, and interest. Then when I want a book to suit my mood (I have many), I look over the covers and pick the one which I want.

Why don't you print more stories about hypnotism? Most people think of mesmerism as some supernatural force. Emphatically it is not. It is merely repeated suggestion. I myself have hypnotized hysterical persons by telling them to focus their concentrated attention upon a revolving mirror which I have, and repeatedly suggesting sleep while they were in a relaxed condition. If they are entirely willing they will fall into a light or deep sleep according to the nature of the methods used, and upon waking will be over the condition of hysteria. Well I guess you have tired of hearing me rave so I will sign off until I see you next issue. Tell my fellow readers to try my method of saving serials. They will find it interesting and helpful.

RUSSEL S. HUGHES,
Cincinnati, Ohio

[We enjoy finding new authors, but they have to stand the fire of remorseless criticism. We think your idea of binding continued stories into one is quite clever. You say you have hypnotized hysterical subjects; it is considered that the unauthorized practice of hypnotism should be strongly discouraged, as anybody who is not fully qualified may do injury to the subject, so we do not like the idea of publishing stories which will encourage indiscriminate experiments in hypnotism.—EDITOR.]

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