

February

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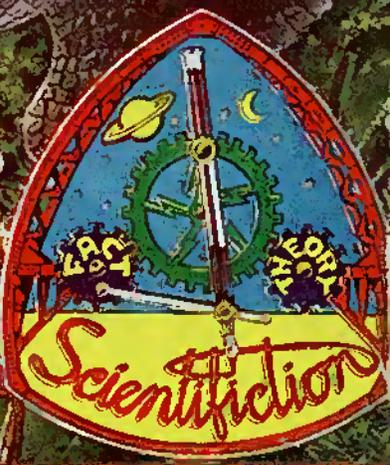
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AMAZING STORIES

HUGO GERNSBACK
EDITOR



Stories by
Marius
H.G. Wells
Miles J. Breuer, M.D.



REWARD

Find the key to unlock
this **FREE** Bag of Gold



THERE are 19 keys pictured here. To be sure, they all look alike, but, examine them closely. 18 of them are exactly alike but "ONE," and only one is DIFFERENT FROM ALL THE OTHERS. It is the key to OPEN THE PADLOCK on this \$3,000.00 FREE "Bag of Gold." **SEE IF YOU CAN FIND IT.**

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CLUES

The difference may be in the size, the shape, or even in the notches. So, **STUDY EACH KEY CAREFULLY** and if you can find the "ONE" KEY that is different from all the others **SEND THE NUMBER OF IT TO ME AT ONCE.** You may become the winner of a Chrysler "75" Royal Sedan or \$3,000.00 cash money,—without one cent of cost to you. I will give away **ABSOLUTELY FREE**—5 new six-cylinder 4-door Sedans and the winners can have **CASH MONEY INSTEAD** of the automobiles if they prefer it. **25 BIG PRIZES TO BE GIVEN FREE**—totaling \$7,300.00 cash.

→ Or Win a CHRYSLER "75" Sedan ←

Choice of this beautiful Chrysler "75" Royal Sedan or \$3,000.00 cash. We pay all the freight and tax in full on all the prizes and deliver them anywhere in the U. S. A. This is an **AMAZING OPPORTUNITY.** **ACT QUICK,** and here is why—

\$1,000.00 CASH—EXTRA FOR PROMPTNESS

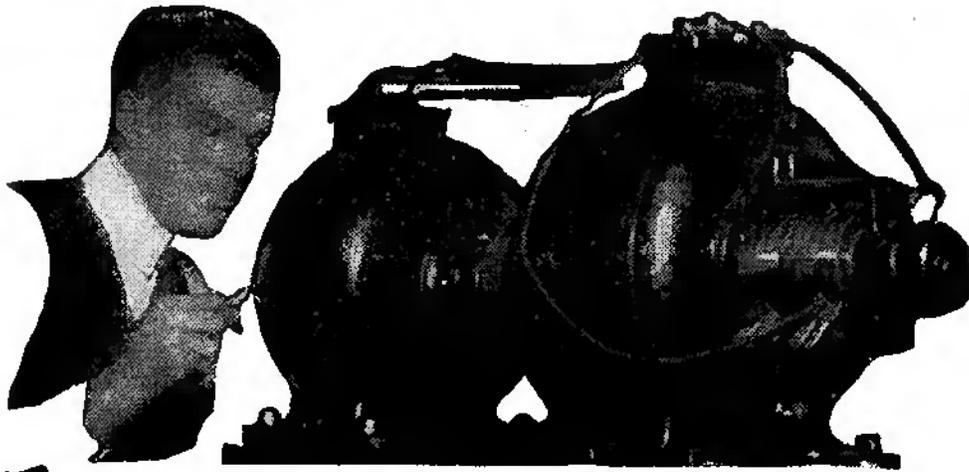
I will pay \$1,000.00 cash money extra **JUST FOR PROMPTNESS.** Duplicate prizes will be paid in full in case of ties. **YOU CAN WIN** the Chrysler "75" Royal Sedan or—\$3,000.00 cash. **ANSWER QUICK.**

You Cannot Lose

Absolutely everyone who takes full advantage of this opportunity will be rewarded. But, hurry, — **find the "ONE" key** that is different from all the others and **RUSH THE NUMBER OF IT** and your name and address to me **TODAY** on a postal card or in a letter. And, just say:—"Key number . . . is different from all the others. Please tell me how I can get this magnificent Chrysler '75' Royal Sedan—or—\$3,000.00 CASH MONEY without obligation or one penny of cost to me."

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my employment department will assist you to part time work if you want to EARN WHILE YOU

LEARN and then after you graduate they will give you lifetime service as often as you want it. Coyne stands behind you for life, that's why our graduates make good

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For a short time I will give at no extra cost, to all enrolling now, my big new aviation electricity course as well as my Radio and auto- mobile electrical courses.

GET MY FREE BOOK mail the coupon today for my free book, it tells you an amazing way to get into a big pay field.

MAIL TODAY

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H. C. LEWIS, President
Coyne Electrical School, Dept., 29-02
500 S. Paulina St., Chicago, Ill.

Dear Mr. Lewis:

Without obligation send me your big free catalog and all details of Free Employment Service, Aviation, Radio and Automotive Courses, and how many "earn while learning."

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Address.....

City..... State.....

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JULES VERNE'S TOMBSTONE AT AMIENS
PORTRAYING HIS IMMORTALITY

AMAZING STORIES

February, 1929
Vol. 3, No. 11

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Publishers of SCIENCE & INVENTION, RADIO NEWS,
RADIO LISTENERS' GUIDE, AMAZING
STORIES QUARTERLY, YOUR BODY

Owners of Broadcast Station WRNY

In Our February Issue:

The Captured Cross-Section By Miles J. Breuer, M.D.	968
The Lord of the Dynamos By H. G. Wells	975
The Sixth Glacier A Serial in 2 parts (Part II) By Marius.....	980
Mernos By Henry James	1000
Phagocytes By A. H. Johnson	1018
The Death of the Moon By Alexander Phillips	1024
The Last Man By Wallace G. West.....	1030

Our Cover

this month depicts a scene from the story entitled "The Death of the Moon," by Alexander Phillips, in which the scientists of the moon, who had that day arrived on the planet Earth, are shown fleeing from the jaws of the enraged Tyrannosaurus Rex, the planet's first inhabitants.

In Our Next Issue:

THE AIRLORDS OF HAN, by Philip Nowlan. When "Armageddon—2419" was published, we received a surprising number of requests for a sequel. Mr. Nowlan has finally given us one, and it is not only worthy of its predecessor; it actually surpasses it. We know you will follow, with bated breath, the work of the scientists of both factions—the Hans and the Americans—while they prepare more and more effective means for attack and defense.

THE FACE OF ISIS, by Cyril G. Wates. Most of our readers will remember Mr. Wates as the first prize winner in our cover illustration contest of December, 1926. His story, "The Visitation," was unanimously acclaimed worthy of the prize. In "The Face of Isis," the author bases his plot on the discovery of an ancient Egyptian casket and on the science of archeology. The contention is that the Aztec culture was an offshoot of the ancient Egyptian civilization. It seems quite plausible.

THE POSTERITY FUND, by Raymond Emery Lawrence. Stories of the far distant future are generally interesting and always compel our attention. This particular tale deals with an unusual subject in the field of scientification—the possible evolution of our present monetary system. You don't need to be an economist to enjoy this ingenious piece of work.

FINGERS OF THE MIST, by Peter Brough. Synthetic life is no novelty in the laboratory any more. Scientists claim to have come pretty close to the secret of life—even if only in the microscopic form thus far. It seems quite possible, even now, that great strides will be made in that science in the near future. At any rate, the idea gives our new author a splendid vehicle for an absorbing story of unusual interest.

And others.

HOW TO SUBSCRIBE TO "AMAZING STORIES." Send your name, address and remittance to Experimenter Publishing Co., 230 Fifth Ave., New York City. Checks and money orders should be made payable to Experimenter Publishing Co., Inc. Mention the name of the magazine you are ordering inasmuch as we also publish RADIO NEWS, SCIENCE & INVENTION, RADIO LISTENERS' GUIDE AND CALL BOOK, AMAZING STORIES QUARTERLY and YOUR BODY. Subscriptions may be made in combination with the other publications just mentioned

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Have you the Courage to take it?



—This \$2,000,000 Guarantee of a Job and Raise

Of course you'd like to earn \$50 or \$75 or \$100 a week—you'd like to do more interesting work—you'd like to get into a line that offers a real future—but do you know how to go about getting these things?

If you have been thinking of "taking a course" but have held back because you were afraid you didn't have education enough to learn better-paid work—if you have hesitated to take the risk that it would actually land you in the better position and increase your salary—then here's the best news you ever heard in your life!

I want to tell you about DRAFTING, and show you that it offers you everything in pay and opportunity that you could hope for. I want to show you that a fine Drafting job is now easily within your reach. And I want to set before you an amazing plan which we have worked out with the co-operation of some of the biggest employers and engineers in America, to prepare you at home, in spare-time, get you the job and raise your pay—absolutely without risk of a penny on your part.



Get this "No-Risk" Plan!

I wish I had the room here to tell you all about DRAFTING—how it has become the most important branch of every kind of manufacturing and building construction work—how fascinating the work is—the fine bunch of fellows you'll work with—the big salaries paid—the wonderful chances for advancement. How, while Drafting is white-collar office work, it is hooked up closely with big projects and big men, and offers the thrill that goes with making plans which govern every move of the men who do the work. All this inside dope takes a 36-page book to describe and I'll be glad to send you a copy free when you mail the coupon for my no-risk job and raise plan.

O.C. Miller
Director Extension Work.



"Only one other man and I, of six taking California State Board examination for Architect, passed. Then I realized the thorough and practical training given by American School. In 18 months I have gone from tracer to Chief Draftsman, in charge of all architectural and engineering work in one of the oldest offices here."

R. L. WARREN,
Los Angeles, Calif.

Come Into DRAFTING!

Thousands of men—not a bit smarter than you, with no more schooling or experience—have gone from poorly paid positions as clerks, mechanics, building trade workers and laborers into Drafting positions paying \$50 to \$100 a week, with our help. Now with a job and a raise waiting for you as soon as you are ready for it, all it takes is the COURAGE to go after it—now if you remain in the rut it's because you choose to, not because you have to.

3 Drafting Lessons

Actually FREE to show you how interesting and simple Drafting is



"When I started American School training in the Spring of 1915 I was working 14 hours a night, seven nights a week for \$1.83 a night. That fall I got a job in the Engineering Dept. of a large firm near here. Today I work 3 1/2 days a week and my salary is larger than I ever dreamed of when I began that course in Mechanical Drafting."

B. H. SEAVERN,
South Bend, Ind.

Maybe you think Drafting is "over your head"—that it takes artistic talent or some ability you haven't got. In that case you have a pleasant surprise coming to you. For I'll be glad to send you the first three lessons from our home-training to show you that the drawing of plans is purely mechanical, easily learned and the most interesting kind of work you ever tackled. It takes little enough courage to look into this wonderful opportunity—just mail the coupon and see for yourself how you like Drafting and our guaranteed way to get into it.

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THE AMERICAN SCHOOL
Dept. D-2294 Drexel Ave. and 58th St., Chicago, Ill.
Please send without cost or obligation, 3 Drafting Lessons, 36-page book with the inside dope about Drafting and your no-risk plan and guarantee to prepare me, to place me and raise my pay, or no cost.

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St. No.....
City..... State.....
Age..... Occupation.....



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Good Chemists Command High Salaries.

You can make yourself independent for life by unearthing one of chemistry's yet undiscovered secrets.



T. O'CONNOR SLOANE,
A.B., A.M., LL.D., Ph.D.
Noted Instructor, Lecturer and Author. Formerly Treasurer American Chemical Society and a practical chemist with many well-known achievements to his credit. Not only has Dr. Sloane taught chemistry for years, but he was for many years engaged in commercial chemistry work.

Do you remember how the tales of pirate gold used to fire your imagination and make you want to sail the uncharted seas in search of treasure and adventure? And then you would regret that such things were no longer done. But that is a mistake. They are done—today and everyday—not on desert islands, but in the chemical laboratories throughout your own country. Quietly, systematically, the chemist works. His work is difficult, but more adventurous than the blood-curdling deeds of the Spanish Main. Instead of meeting an early and violent death on some forgotten shore, he gathers wealth and honor through his invaluable contributions to humanity. Alfred Nobel, the Swedish chemist who invented dynamite, made so many millions that the income alone from his bequests provides five \$40,000 prizes every year for the advancement of science and peace. C. M. Hall, the chemist who discovered how to manufacture aluminum, made millions through this discovery. F. G. Cottrell, who devised a valuable process for recovering the waste from flue gases, James Gayley, who showed how to save enormous losses in steel manufacture, L. H. Baekeland, who invented Bakelite—these are only a few of the men to whom fortunes have come through their chemical achievements.

What Some of Our Students Say of This Course!

I have not written since I received the big set. I can still say that it far exceeded my anticipations. Since I have been studying with your school I have been appointed chemist for the Scranton Coal Co., testing all the coal and ash by proximate analysis. The lessons are helping me wonderfully, and the interesting way in which they are written makes me wait patiently for each lesson.—MORLAIS COUZENS.

I wish to express my appreciation of your prompt reply to my letter and to the recommendation to the General Electric Co. I intend to start the student engineering course at the works. This is somewhat along electrical lines, but the fact that I had a recommendation from a reliable school no doubt had considerable influence in helping me to secure the job.—H. VAN BENTHUYSEN.

So far I've been more than pleased with your course and am still doing nicely. I hope to be your honor graduate this year.—J. M. NORRIS, JR.

I find your course excellent and your instruction, truthfully, the clearest and best assembled I have ever taken, and yours is the fifth one I've studied.—JAMES J. KELLY.

Let me state that I have obtained a new and better position; this is with the Heller & Metz Analytic Dye Co. in their main laboratory. Thanks to your course I am well prepared and able to hold same.—F. J. PEIFFER.

It is really the knowledge I have gained from it (the Course) that has made it possible for me to hold the job I have at present.—W. H. YODER.

I am more than pleased. You dig right in from the start. I am going to get somewhere with this course. I am so glad that I found you.—A. A. CAMERON.

I use your lessons constantly as I find it more thorough than most text books I can secure.—WM. H. TIBBS.

Thanking you for your lessons, which I find not only clear and concise, but wonderfully interesting, I am—ROBT. H. TRAYLOR.

I received employment in the Consolidated Gas Co. I appreciate very much the good service of the school when a recommendation was asked for.—JOS. DECKER.

Now Is the Time to Study Chemistry

Not only are there boundless opportunities for amassing wealth in Chemistry, but the profession affords congenial employment at good salaries to hundreds of thousands who merely follow out its present applications. These applications are innumerable, touching intimately every business and every product in the world. The work of the chemist can hardly be called work at all. It is the keenest and most enjoyable kind of pleasure. The days in a chemical laboratory are filled with thrilling and delightful experimentation, with the alluring prospect of a discovery that may spell fortune always at hand to spur your enthusiasm.

You Can Learn at Home

To qualify for this remarkable calling requires elaborate specialized training. Formerly it was necessary to attend a university for several years to acquire that training, but thanks to our highly perfected and thorough system of instruction, you can now stay at home. Keep your schooling you can take our course in Chemistry during your spare time. Even with only common laboratory. Dr. Sloane gives every one of his students the same careful, personal supervision that made him celebrated throughout his long career as a college professor. Your instruction from the very beginning is made interesting and practical, and we supply you with apparatus and chemicals for performing the fascinating analyses and experimental work that plays such a large part in our method of teaching, and you are awarded the Institute's official diploma after you have satisfactorily completed the course.

Easy Monthly Payments

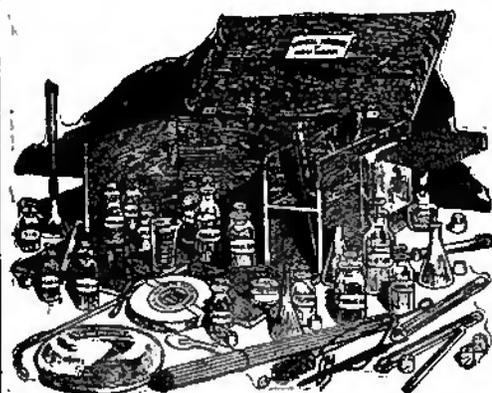
You don't have to have even the small price of the course to start. You can pay for it in small monthly amounts—so small that you won't feel them. The cost of our course is very low, and includes everything, even the chemistry outfit—there are no extras to buy with our course. Our plan of monthly payments places a chemical education within the reach of everyone. Write us and let us explain our plan in full—give us the opportunity of showing you how you can qualify for a highly trained technical position without even giving up your present employment.

MAIL COUPON FOR FREE BOOK

Your name and address on the coupon will bring you by return mail our interesting free book, "OPPORTUNITIES FOR CHEMISTS," and full particulars about the course and what it will do for you. You owe it to yourself to get this book. Send the coupon right now while it is fresh in your mind. Or just write your name and address on a postal and mail it to us. But whatever you do, act today.

DON'T WAIT—MAIL COUPON NOW!

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Experimental Equipment Furnished to Every Student

We give to every student, without additional charge, this chemical equipment, including fifty-two pieces of laboratory apparatus and supplies, and fifty-two different chemicals and reagents. These comprise the apparatus and chemicals used for the experimental work of the course. The fitted heavy wooden box serves not only as a case for the outfit but also as a useful laboratory necessary for performing countless experiments.

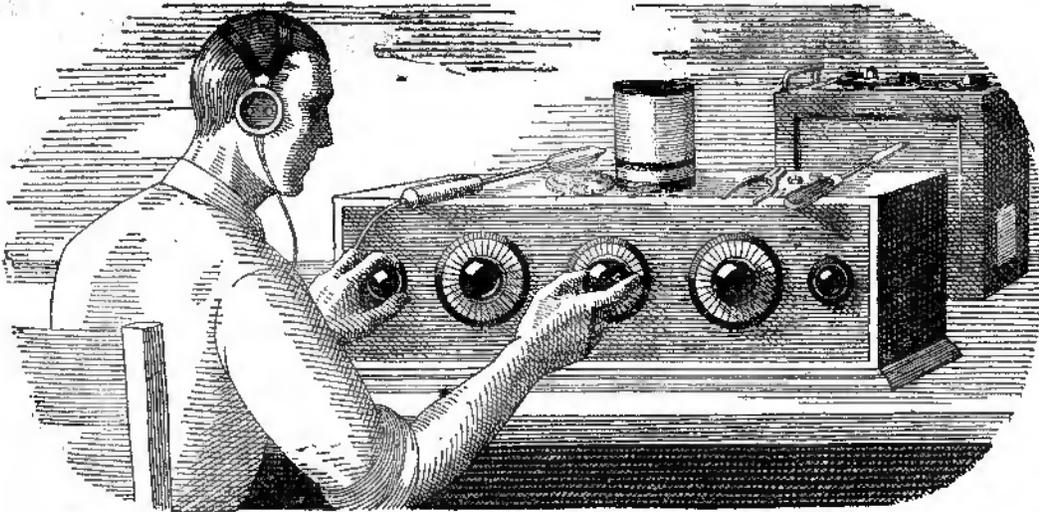
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Please send the at once, without any obligation on my part, your free Book "Opportunities for Chemists," and full particulars about the Experimental Equipment given to every student. Also please tell me about your plan of payment.



If all the Radio sets I've "fooled" with in my time were piled on top of each other, they'd reach about halfway to Mars. The trouble with me was that I thought I knew so much about Radio that I really didn't know the first thing. I thought Radio was a plaything—that was all I could see in it for me.

I Thought Radio Was a Plaything

But Now My Eyes Are Opened, And I'm Making Over \$100 a Week!

\$50 a week! Man alive, just one year ago a salary that big would have been the height of my ambition.

Twelve months ago I was scrimping along on starvation wages, just barely making both ends meet. It was the same old story—a little job, a salary just as small as the job, while I myself had been dragging along in the rut so long I couldn't see over the sides.

If you'd told me a year ago that in twelve months' time I would be making \$100 and every week in the Radio business—well! I know I'd have thought you were crazy. But that's the sort of money I'm pulling down right now—and in the future I expect even more. Why only today—

But I'm getting ahead of my story. I was hard up a year ago because I was kidding myself, that's all—not because I had to be. I could have been holding then the same sort of job I'm holding now, if I'd only been wise to myself. If you've fooled around with Radio, but never thought of it as a serious business, maybe you're in just the same boat I was. If so, you'll want to read how my eyes were opened for me.

When broadcasting first became the rage, several years ago, I first began my dabbling with the new art of Radio. I was "nuts" about the subject, like many thousands of other fellows all over the country. And no wonder! There's a fascination—something that grabs hold of a fellow—about twirling a little knob and suddenly listening to a voice speaking a thousand miles away. Twirling it a little more and listening to the mysterious dots and dashes of steamers far at sea. Even today I get a thrill from this strange force. In those days, many times I stayed up almost the whole night trying for DX. Many times I missed supper because I couldn't be dragged away from the latest circuit I was trying out.

I never seemed to get very far with it, though. I used to read the Radio magazines and occasionally a Radio book, but I never understood the subject very clearly, and lots of things I didn't see through at all.

So, up to a year ago, I was just a dabbler—I thought Radio was a plaything. I never realized what an enormous fast-growing industry Radio had come to be—employing thousands and thousands of trained men.

I usually stayed home in the evenings after work, because I didn't make enough money to go out very much. And generally during the evening I'd tinker a little with Radio—a set of my own or some friend's. I even made a little spare change this way, which helped a lot, but I didn't know enough to go very far with such work.

And as for the idea that a splendid Radio job might be mine, if I made a little effort to prepare for it—such an idea never entered my head. When a friend suggested it to me one year ago, I laughed at him.

"You're kidding me," I said.
"I'm not," he replied. "Take a look at this ad."

He pointed to a page ad in a magazine, an advertisement I'd seen many times but just passed up without thinking, never dreaming it applied to me. This time I read the ad carefully. It told of many big opportunities for trained men to succeed in the great new Radio field. With the advertisement was a coupon offering a big free book full of information. I sent the coupon in, and in a few days received a handsome 64-page book, printed in two colors, telling all about the opportunities in the Radio field and how a man can prepare quickly and easily at home to take advantage of these opportunities. Well, it was a revelation to me. I read the book carefully, and when I finished it I made my decision.

What's happened in the twelve months since that day, as I've already told you, seems almost like a dream to me now. For ten of those twelve months, I've had a Radio business of my own. At first, of course, I started it as a little proposition on the side, under the guidance of the National Radio Institute, the outfit that gave me my Radio training. It wasn't long before I was getting so much to do in the Radio line that I quit my measly little clerical job, and devoted my full time to my Radio business.

Since that time I've gone right on up, always under the watchful guidance of my friends at the National Radio Institute. They would have given me just as much help, too, if I had wanted to follow some other line of Radio besides building my own retail business—such as broadcasting, manufacturing, experimenting, sea operating, or any one of the score of lines they prepare you for.

And to think that until that day I sent for their eye-opening book, I'd been waiting "I never had a chance!"

Now I'm making, as I told you before, over \$100 a week. And I know the future holds even more, for Radio is one of the most progressive, fastest-growing businesses in the world today. And it's work that I like—work a man can get interested in.

Here's a real tip. You may not be as bad off as I was. But think it over—are you satisfied? Are you making enough money, at work that you like? Would you sign a contract to stay where you are now for the next ten years—making the same money? If not, you'd better be doing something about it instead of drifting.

This new Radio game is a live-wire field of golden rewards. The work, in any of the 20 different lines of Radio, is fascinating, absorbing, well paid. The National Radio Institute—oldest and largest Radio home-study school in the world—will train you inexpensively in your own home to know Radio from A to Z and to increase your earnings in the Radio field.

Take another tip—no matter what your plans are, no matter how much or how little you know about Radio—clip the coupon below and look their free book over. It is filled with interesting facts, figures, and photos, and the information it will give you is worth a few minutes of anybody's time. You will place yourself under no obligation—the book is free, and is gladly sent to any one who wants to know about Radio. Just address J. E. Smith, President, National Radio Institute, Dept. 9N2, Washington, D. C.

J. E. SMITH, President.
National Radio Institute.
Dept. 9N2, Washington, D. C.

Dear Mr. Smith:

Please send me your 64-page free book, printed in two colors, giving all information about the opportunities in Radio and how I can learn quickly and easily at home to take advantage of them. I understand this request places me under no obligation, and that no salesman will call on me.

Name.....
Address.....
Town..... State.....
Occupation.....

LOW PAY., LONG HOURS., ROUTINE., NO FUTURE



Always worrying over money. Always skimping and economizing—going without the comforts and luxuries that every man **DESERVES** for his family and himself.



The Time Clock—a badge of hawk-like supervision and The Rut. A constant reminder that one is "just another name on the pay-roll."



Human cogs in a great machine. No chance to meet people, travel or have interesting experiences. A long, slow, tiresome road that leads nowhere.



Always wondering what would happen in case of a "lay-off" or loss of job. No chance to express ideas and ability—no chance to get ahead. **COULD** there be a way out?

I Said "Good-bye" to It All After Reading This Amazing Book—Raised My Earnings 700%!



Where Shall We Send Your Copy

WHEN a man who has been struggling along at a low-pay job suddenly steps out and commences to earn real money—\$5000, \$7500 or \$10,000 a year—he usually gives his friends quite a shock. It's hard for them to believe he is the same man they used to know... but such things happen much more frequently than most people realize. Not only one, but **HUNDREDS** have altered the whole course of their lives after reading the amazing book illustrated at the right.

True, it is only a book—just seven ounces of paper and printer's ink—but it contains the most vivid and inspiring message that any ambitious man can read! It reveals facts and secrets that will open almost any man's eyes to things he has never even dreamed of!

Remarkable Salary Increases

For example, R. B. Hansen of Akron, Ohio, is just one case. Not long ago he was a foreman in the rubber-curing room of a big factory at a salary of \$160 a month. One day this remarkable volume, "Secrets of Modern, Dynamic Salesmanship," fell into his hands. And from that day on, Mr. Hansen clearly saw the way to say "good-bye" forever to low pay, long hours, and tiresome routine! Today he has reaped the rewards that this little volume placed within his reach. His salary runs well into the 5-figure class—actually exceeding \$10,000 a year!

YOUR INCOME MULTIPLIED OR YOU PAY NOTHING

N.S.T.A. is now offering to every man who wants to increase his income, an amazing Double Money-Back Bond that assures you a definite stipulated addition to your income, within three months after your training is completed—or the course costs you nothing. This daring offer is possible only because of the success of thousands of members. Remember, if you are really ambitious to increase your earnings, this opportunity is offered you by a million dollar institution, the oldest and largest of its kind in the world. Send coupon immediately for full details.

Another man, Wm. Shore of Menach, California, was a cowboy when he sent for "Secrets of Modern, Dynamic Salesmanship." Now he is a star salesman making as high as \$525 in a single week. O. D. Oliver of Norman, Oklahoma, read it and jumped from \$200 a month to over \$10,000 a year! C. V. Champion of Danville, Illinois, raised his salary to over \$10,000 a year and became President of his company in the bargain!

A Few Weeks—Then Bigger Pay

There was nothing "different" about any of these men when they started. None of them had any special advantages—although all of them realized that **SALESMANSHIP** offers bigger rewards than any other profession under the sun. But, like many other men, they subscribed to the foolish belief that successful salesmen are born with some sort of "magic gift." "Secrets of Modern, Dynamic Salesmanship" showed them that nothing could be farther from the truth! Salesmanship is just like any other profession. It has certain fundamental rules and laws—laws that you can master as easily as you

learned the alphabet. City and traveling sales positions are open in every line all over the country. For years, thousands of leading firms have called on the N. S. T. A. to supply them with salesmen. Employment service is free to both employers and members, and thousands have secured positions this way.

-FREE?

Free to Every Man

See for yourself **WHY** "Secrets of Modern, Dynamic Salesmanship" has been the deciding factor in the careers of so many men who are now making \$10,000 a year. Learn for yourself the **REAL TRUTH** about the art of selling! You do not risk one penny nor incur the slightest obligation. And since it may mean the turning point of your whole career, it certainly is worth your time to fill out and clip the blank below. Send it now!

National Salesmen's Training Association
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LIFE, THE AMAZING PUZZLE

By HUGO GERNSBACK



FISH swimming in his natural element, water, perhaps never pays any attention to his surroundings, taking the water entirely for granted. As a matter of fact, he probably does not know of such a question, because, having been in the water always, he has become so accustomed to his life there, that he has accepted it as a matter

of course and of no concern to him.

The human being, growing up among other human beings, and among other living creatures, also becomes so accustomed to life all about him, that he accepts it and no longer pays any particular attention to it.

Once in a while a philosopher breaks loose and begins to question life in general and to ask "Why is life?" Of course, no satisfactory answer has ever come forth, and probably none ever will be found.

But to the thinking student, the thought must occur that anything alive, whether it be human being, animal or plant, is exceedingly out of keeping with the rest of the universe. It may be said definitely that life, as we know it, occurs only in extremely isolated instances, and such sort of life amounts to so little that it is entirely negligible in relation to the rest of the universe.

Take our own planet, for instance. If you investigate the subject, you will find that all life, in proportion to the planet itself, amounts to practically nothing. The overwhelming majority of the planet is inert matter—atmosphere, oceans, continents and the material that composes them. It is the same throughout nature. Take the parent body, for example, the sun, which is responsible for all life. We know definitely that it is impossible for life, as we know it, to exist on the sun. Neither animals nor plants could live on the sun, even for the merest fraction of a second.

Practically all of our planets tell the same story. Jupiter, by far the largest of all the planets—as large, in fact, as all the rest of the planets combined—is still in a plastic form. It has not, as yet, cooled down. We know for a certainty that life, such as we encounter on this planet, cannot exist on Jupiter.

On the other hand, we also know, for a certainty, that life will not always be existent upon our own planet. Indeed, for

billions of years, before life appeared on this planet, it was entirely barren of plant and animal life, and if we take a lesson from our own moon, from Mars, and from other celestial bodies, we may predict, with equal certainty, that a time will come on earth, when life will again be non-existent.

Indeed, scientists tell us that this recurring change is no longer a novelty on this planet. This idea of a sort of cycle, is supported by the famous English scientist, Soddy. Due to radium action, the earth will continually get hotter, until finally, it will practically burn up. Then will come another period of cooling, when a crust will again form upon the earth, at which time it may be possible for life to inhabit the thin crust once more, the same as it does now. How long these cycles last, no one knows. In between, there are the ice ages, as well as the other cycles, well known to geologists.

No one seems to be certain that life appears on this planet after every general destruction. As a matter of fact, life itself is a great puzzle to pure science, and really unaccountable.

Human beings, in their arrogance and conceit, are prone to point out that it is the human mind which controls the world. But this is plain foolishness and means nothing. It is simply human vain-gloriousness to assume so. *Human life, and all other life as well, is of no necessity to nature in general.* Millions of celestial bodies get along very nicely without life, just the same as our sun and other heavenly bodies do.

It pleases us and pleases our vanity to think how important we are to this world, yet, when we consider the problem soberly, we must admit that the human being is, and probably always will be, subservient to all nature's forces, whether they be earthquakes, tornadoes, tidal waves, stellar cataclysms, or what not.

The Sun, 92,000,000 miles away, gives us what we are pleased to call life. Without it, we should perish, as many other races have doubtless perished countless times, in the history of the universe. No matter what we do on earth, and no matter how grandiose our handiwork, nothing will remain after the usual geological cataclysm. It is probably certain that civilizations much higher than ours were present upon this globe, many times in the history of the earth. Yet nothing remains to show what went on before. And it will probably always be thus.

Mr. Hugo Gernsback speaks every Tuesday at 9.30 P. M. from WFRY (297 meters) and W2XAL (30.91 meters) on various scientific subjects.

The CAPTURED CROSS-SECTION

By Miles J. Breuer, M.D.

Author of: "The Man with the Strange Head," "The Appendix and the Spectacles," etc.



HE head of Jiles Heagey, Instructor in Mathematics, was bent low over the sheets of figures; and becomingly close to it, leaned the curly-haired one of his fiancée, Sheila Mathers, daughter of the Head of the Mathematics Department. Sheila was no mean mathematician herself, and had published some original papers.

"Are you trying to tell me that this stuff makes any sense?" she laughed, shaking her head over the stack of papers.

"Your father couldn't follow it either," Heagey answered. "He used abusive language at me when I showed it to him."

"Now don't be mean to my father. Some day you'll learn that under his blustering exterior he has a heart of gold. But what do these things mean, and what did you bring me in here for?"

"You have followed through Einstein's equation for the transformation of coordinates, have you not?" Heagey explained. "Well, this is Einstein's stuff, only I've carried it farther than he did."

"It doesn't look the same——" Sheila shook her head.

"That is because I am using four coordinates. The most complicated existing equations, with the three coordinates x , y , and z , and involving three equations each with the variables:

$$\begin{array}{lll} x_1, & y_1, & z_1, \\ x_2, & y_2, & z_2, \\ x_3, & y_3, & z_3, \end{array}$$

require that you keep in mind nine equations at a time. That is a heavy burden and relatively few men are able to do it. Here I have four coordinates, w , x , y , and z , and the variables:

$$\begin{array}{llll} w_1, & x_1, & y_1, & z_1, \\ w_2, & x_2, & y_2, & z_2, \\ w_3, & x_3, & y_3, & z_3, \\ w_4, & x_4, & y_4, & z_4, \end{array}$$

and requiring that I carry in my mind sixteen equations

at one time. That may seem impossible, but I've drilled myself at it for two years, and gradually I was able to go farther and farther....."

"But there are other quantities here," Sheila interrupted, studying the paper intently, "that do not belong in equations for the rotation of coordinates. They look like the integrals in electromagnetic equations."

"Good for you!" Heagey cried enthusiastically.

"That pretty little head has something on the inside, too. That is just exactly what they are: electromagnetic integrals. You see, the rotation of coordinates looks very pretty in theory, but when you hook it up with a little practical dynamics—don't you understand yet?"

Sheila stared at the young mathematician in questioning wonder.

"Sheila, jewel, you're just irresistible that way. I can't help it." He gathered her in his arms and kissed her face in a dozen places. She pushed him away.

"No more until you tell me what this is about. I mean it!" She stamped her foot, but a merry smile contradicted her stern frown.

"You're just like your father when you're like that," he said, taking up the papers again. "Very simple little conception," he continued. "Why be satisfied with rotating coordinates on paper? Here's a way to rotate them in concrete, physical reality.

"Listen now. When you rotate two coordinates through ninety degrees, you have an ordinate where there previously was an abscissa. If you rotate three coordinates through ninety degrees, you can make a vertical plane occupy a horizontal position. Now—suppose you rotate four coordinates through forty-five degrees: you can then make a portion of space occupy a new position, outside of what we know as space. And we can bring into this space of ours, a portion of the unknown space along the fourth coordinate——"

"The fourth dimension!" gasped Sheila.

"There it is on paper. But we're going to do it in reality. There——" pointing across the room——

"are the coils by means of which we can rotate some real space. I want you to see the preliminary trial. As I do not know just exactly what may happen, I am going to rotate only a small portion to begin with."

Sheila's eyes gleamed with excited comprehension.

"Call father in. He's just across the corridor——"

"Not for the very first trial. I want you to see that alone. After we know what it will do——"

"But it may be dangerous. Something may happen!"

"You think it might injure the furniture or damage the building? For the preliminary trial I shall rotate it only for an instant and turn it back instantly."

She clung to his arm nervously while he grasped the black handle of the switch and threw it down, waited a few seconds, and pulled it out again.

OUR well-known author again has taken the Fourth Dimension as the basis of another of his interesting tales, but this time he takes us to a world of wonders by an entirely different route. The story certainly is highly absorbing and will be found to give abundant food for thought.

It contains a great many original points which we believe have never been touched upon before in a Fourth Dimensional story.



"I swung among millions of small spherical bodies disposed irregularly in all directions about me, even below. They moved gently back and forth in small arcs. And there were large brown bodies..."

THEY saw nothing. There was a crash, instantaneously loud, and fading almost instantly to a distant, muffled rumble, and ceasing suddenly. There was a heavy thud and a pounding on the floor. Sheila gave a little scream.

There in front of them was a rapidly moving object; it bounced up and down off the floor to a height of three feet about once a second. It did not have the harmonic motion of a bouncing body, however; it stopped abruptly up in the air and shot downward at high speed, hit the floor, stopped a moment and shot back upward. Then it stopped suddenly and hung in the air. It was about the size of a large watermelon, and looked for all the world like human skin; smooth, uniform, unbroken all around.

The two stared at it amazed. Heagey walked up and touched it with the tip of a finger. It grew smaller. And suddenly it decreased to about one-half its former size, retaining its surface smoothness and uniformity unchanged.

It had felt soft and warm, like human flesh.

Now it was increasing in size again, while they stared gasping, speechless, at it. When it stopped growing suddenly, it was the size of a big barrel, with rounded ends. There was a bulging ridge around the middle, on each side of which was a dark-brown strap of something like leather. The rest of it was just naked skin.

Sheila and Heagey stood rooted to the spot, staring at it and at each other. What was the thing? Where had it come from?

The Thing began thumping up and down off the floor again, with great, thudding shocks. After a while it desisted and lay still. It was a most uncouth, hideous looking thing: a great lump of naked flesh with two straps around it. It looked for all the world like some huge tumor in a medical museum, or like some monstrosity of birth. Could it be alive?

Both of them approached it cautiously. Heagey pricked it with a pin. The skin was tough and he jabbed hard. A drop of blood appeared.

Then there was a terrible commotion. The object decreased in size to a small sphere like a baseball. In fact, there were several baseball-sized lumps of flesh all around; just naked flesh. They moved rapidly, and two of them were between him and Sheila. Two or three were on the far side of her. He counted ten of them altogether. Five of them closed swiftly around her. Then she was gone!

Her scream, cut suddenly short, still rang in his ears. And she was gone! Suddenly vanished from in front of him! He groped about, feeling for her in the empty air, but there was nothing anywhere. There lay the watermelon-like lump of flesh that he had first seen. It was on the floor and lay quite still. And she was gone! He held his head distractedly.

The door opened and Professor Mathers, Sheila's father, came in.

"What's going on in here?" he demanded, blinking his eyes.

Heagey stared blankly, trying to think.

"This thumping and screaming?" the professor continued.

"I think I begin to understand," Heagey began.

"Think you understand!" the professor shouted. "What have you done to my daughter? She doesn't scream for nothing."

He caught sight of the ovoid lump of flesh. He turned pale and stopped as if frozen. Some terrible thought crossed his mind, connecting it with his daughter; had some nefarious experiment turned her into that thing?

"What's that?" he snapped savagely.

"Something's got to be done," Heagey said, chiefly to himself. "We've got to bring her back here. I'm afraid to manipulate the thing too many times; the Lord only knows what else it may dip up."

The professor glared.

"You sound like a first-rate maniac-depressive crazy man——"

"Wait till I shut that thing up," Heagey said, getting a hold on himself; "and I'll explain all I know about this. I was getting ready to try to rotate a dog out of space, and so I have a new, strong dog-cage here."

He set the dog-cage down beside the lump of flesh; very gently, very slowly, he pushed it in. His touch recoiled at the warm, soft feel of it; but he got it into the cage and locked the door. Then he set out a chair for the professor, but his hand shook, for his mind was on Sheila.

He sat down facing the professor, his back to the cage. Suddenly the professor's face fell, and his eyes stared ahead with a look of utter blankness. Heagey whirled around and looked at his "specimen." It was out of the cage!

There hadn't been a sound. His eyes had not been off it for ten seconds. The cage was still locked. There it lay, three feet away from the cage, only it wasn't the same. There were two pieces of it now, long, cylindrical, rounded at the ends. Like a couple of legs without knees or feet. Heagey got up and unlocked the cage, noting that it required fifteen seconds. He felt around inside the cage with his hands, but found nothing.

"After all," he sighed, "it is very simple."

THE professor stared at him, now thoroughly convinced that he was crazy. Heagey explained about his sixteen equations and how readily they interlocked with the electromagnetic integrals, and of how the very simple application of any form of electromagnetic energy would rotate four coordinates.

"I wanted her to see the preliminary experiment. I used but little power on a small field. Just opened a little trap-door into space, so to speak. There is only one explanation for what has happened here. I rotated a portion of a fourth dimension, and left a hole in hyperspace for an instant. Just as if you rotate up a portion of this floor, there will be a hole left. As chance would have it, just at that moment some inhabitant of hyperspace came along and stumbled into it, and I swung back on him and caught him.

"Here he is, stuck. What we see and feel is a cross-section of him, a solid cross-section of that part of him that is cut by our three-dimensional space. See! If I

stick my finger through this sheet of paper, the two-dimensional inhabitants on its surface will perceive only a circle. At first the nail occupies a portion of its circumference; as I push my finger on through, the nail is gone, and folds and ridges appear and disappear. If my whole hand goes through, the circle increases greatly in size. If they draw a circle around my finger and try to imprison it, I can withdraw it and stick it through somewhere else, and they cannot understand how it was done——"

"But what about Sheila? Where is she?"

Heagey's face dropped. He had been full of interest and exultation in his problem. The reminder of her was an icy shock.

"There is only one possible conclusion," he went on in a dead voice. "The struggles of the fourth-dimensional creature swept her out into hyperspace."

The professor sprang up and walked rapidly out of the room. There was something determined in his stride. He slammed the door. Heagey sat down and thought. Somehow he must rescue Sheila.

How could it be done? Should he try the rotation again? He had all the figures and could repeat it accurately. But, that would not be at all certain to get her back. The captured fourth-dimensional creature might get away. Heagey didn't want to lose him. Not only that he wanted to study him, but somehow he felt that he must hang on to the only link with that world where Sheila was now lost.

The thought of its getting away worried him. How could he make sure that it would not escape? He reasoned back to the plane section of a three-dimensional object. Enclosing it in a circle would do no good. But, if tied tightly with a circle of rope, it might be kept from moving up and down. Analogically, if he could get this thing into some sort of a tight bag, he might feel free to flip his trap-door once more. Ah! then came the brilliant idea!

He could sally out into hyperspace and look for Sheila!

He got the lump of flesh fastened up tight in a canvas sack and lashed the other end of the stout rope with which he tied it, around a concrete pillar. Then the door opened and two policemen walked in, followed by the professor. He was urging them on. "There he is! Grab him!" he seemed to say in attitude and gesture, though not in words.

A pang of alarm shot through Heagey. He was needed right here to rescue Sheila. What would become of her if they locked him up? His mind as usual worked quickly and logically, in contradistinction to the professor's, who seemed to have been thrown into an unreasoning rage by his daughter's disappearance. He sprang to his switchboard and shouted:

"Stop!"

Something in his determined attitude alarmed the policemen; his hand on the ominous-looking apparatus might mean something. They stopped.

"What's this? What do you want?" Heagey demanded.

The professor's torrents broke loose.

"He murdered my daughter. Made away with her.

I've got a warrant for his arrest. Nonsensical twaddle about the fourth dimension. Prosecute him to the limit; that's what I'll do. Been hanging around her too much. He's crazy. Throw him in jail. Make him bring her back!"

Heagey laughed a desperate laugh, which made the other three more certain that he was a dangerous maniac.

"Like throwing debtors into jail," Heagey derided acidly. "Fat chance of paying the debt then! Move another step and I'll throw the three of you into unknown hyperspace."

They were all afraid, of they knew not what. Heagey outlined to them that he wanted to go out into hyperspace and search for Sheila. But he would tie himself on a rope fastened at this end. And he wanted someone here at this end, who was friendly to him, to manage things. He telephoned out for a rope and for two of his students. The policemen watched, too puzzled to know what to do. The professor acquiesced, more from fear, like a man at the point of a gun, than because he saw the reason of it.

The rope was delivered and the two students, Adkins and Beemer, arrived. They helped him fix a firm sling around his shoulders, waist, and thighs. The loose rope was coiled up on the floor, several hundred feet of it, and the other end tied to a concrete pillar. There was some amazed staring by the students at the writhing thing in the canvas sack.

"I'll tell you about that later," Heagey said. "All the pointers and dials are set. All you need to do is to throw this switch and jerk it back at once. Adkins, you do that; and Beemer, you watch the rope. When I signal by jerking it six times, Adkins, you throw the switch again the same way."

That was all. Without another word Adkins threw the switch. There was the same crash, instantaneously muffled and almost suddenly fading away as at a distance. There was a momentary sensation of agitation, though nothing really moved.

HEAAGEY was gone. The loose end of the rope that had tied him lay on the floor. It was certainly a breathless thing. The professor stared with a sort of vacant expression on his face, as though the solid ground had suddenly dropped from beneath his feet. It dawned upon him that perhaps Sheila had really disappeared that way.

Beemer picked up the end of the rope. It was not an end; it merely looked that way. There was a strong tension on it; in fact it soon began to slip through his hands, and coil after coil was drawn off the pile on the floor, and simply vanished. For a while it stopped and then went on unwinding.

The policemen gazed blankly. They were unable to understand what had happened. The man they were to arrest had suddenly melted from sight. They mumbled astonished monosyllables to each other. But, they were not as astonished as was Professor Mathers. They did not grasp the enormity of what was going on, as he did. It upset his whole mental universe. He sat a while and then paced nervously up and down the vast room.

He came and looked at the rope. Then he looked at the canvas sack. The sack lay loose as though the contents had escaped. He felt of it and found that it contained three soft, baseball-sized objects. He jumped back and shrank away from it. The time seemed interminable. He waited and waited.

Besides an occasional mumble between the policemen or a short exclamation from Adkins or Beemer, there was no conversation. Beemer watched the rope closely. There was a tense nervous strain created largely by the professor's distracted movements. Then, after what seemed hours, though in reality less than one hour, there were six short tugs on the rope. Adkins threw his switch, and out of the crash and tremor Heagey tumbled out on the floor, all tangled up in coils of rope.

He was breathless, haggard, wild-eyed. He lay for a moment on the floor, panting. Then he sprang up and gazed fiercely, wildly about. He seemed suddenly to perceive where he was. An expression of relief came over his face; he sighed deeply and sank down to a sitting position. He looked exhausted; his clothes were disarranged and ripped in some places, and were covered with dust.

The five people looked at him in silent amazement. He looked from one to the other of them; it was a long time before he spoke.

"Good to be back here. I can hardly believe I'm really back. Never again for me."

"What about Sheila? Where is she?" the professor demanded.

Heagey recoiled as though from some shock. He sank ~~again into~~ profound depression. At first he had seemed a little happy to get back. Apparently Sheila had been forcibly driven out of his mind for the time.

"Let me tell you about it," he began slowly. He seemed not to know just how to proceed. "That is, if I can. I don't even know how to tell it. I know what it must feel like to go insane.

"I heard the switch go down as I gave Adkins the signal. Then it seemed like an elevator starting, and that was all. Until I looked around.

"I was sitting on something that looked like rock or cement. Not far from me was that barrel-like lump of flesh with the two straps around it, just exactly as I had seen it in the laboratory. And then a row of shapes reaching into the dim, blue distance. The nearer ones seemed to be of concrete or cement. You've heard me jeer at the crazy, cubistic and futuristic designs on book wrappers and wall-paper. Well, those are pleasant and harmonious compared with the dizzy, jagged angles, the irregular, zig-zag shapes with peaks and slants, and everything out of sense and reason except perspective. Perspective was still correct. Just a long, straight row fading into the distance. What in the world it could be, I hadn't the faintest idea. However, I gradually reasoned it out.

"Naturally, since I am a three-dimensional organism, I can only perceive three dimensions. Even out in hyperspace I can only see three dimensions. What I saw must therefore be the spatial cross-section of some sort of buildings. I couldn't see the entire buildings, but merely the cross-section cut by the particular set of

coordinates in which I was. Now it occurs to me, that since that barrel-like thing looked exactly the same to me out there as it did in the room here, I must have been in a 'space' or set of coordinates parallel to the ones we are in now.

"**I**MAGINE a two-dimensional being, whose life had been confined to a sheet of paper and who could only perceive in two dimensions, suddenly turned loose in a room. He could only see one plane at a time. Everything he saw would be cross-sections of things as we know them. Wouldn't he go crazy? I nearly did.

"I first started out to walk along beside the row of rock-like shapes. Suddenly near me there appeared two spheres of flesh, just like this one we have here. They rapidly increased in size, coalesced into a barrel-shaped thing with a metal-web belt around the middle, and then dwindled quickly; there were three or four smaller gobs of stuff and then ten or a dozen little ones; finally an irregular, blotchy, melon-like thing which quickly disappeared. In fifteen seconds it had all materialized and gone.

"I was beginning to understand the stuff now. Merely some inhabitant or creature of hyperspace going by. As he passed through my particular spatial plane, I saw successive cross-sections of him. Just as though my body were passing through a plane, say feet first: first there would be two irregular circles; then a larger oval, the trunk, with two circles, the arms, at the sides and separate from it; and so on until the top of the head vanished as a small spot.

"I followed down the line of buildings, looking around. Bizarre shapes appeared around me, changing size and shape in the wildest, dizziest, most uncouth ways, splitting into a dozen pieces and coming together into large, irregular chunks. Some seemed to be metal or concrete, some human flesh, naked or clothed. In a few minutes my mind became accustomed to interpreting this passage of fourth-dimensional things through my 'plane' and I studied them with interest. Then I slipped and fell, down. Down I whizzed for a while, and everything about me disappeared.

"I found myself rolling; and sitting up, I looked around again. There was nothing. I still seemed to be on cement or stone; and in all directions it stretched away endlessly into the distance. It was the most disconcerting thing I had ever seen in my life. I was just a speck in a universe of cement pavement. I began to get panicky, but controlled myself and started to walk, feeling the reassuring pull of the rope behind me. I walked nervously and saw nothing anywhere. Evidently I had slipped off my former 'plane' and gotten into a new one. The rope tightened suddenly; perhaps I had reached the end of it. It jerked me backwards and I swung dizzily, my feet hanging loose.

"I swung among millions of small spherical bodies disposed irregularly in all directions about me, even below. They moved gently back and forth in small arcs; and there were large brown bodies—

"Why go through it all? I stumbled from one spatial plane into another. Each seemed a totally different

universe. I couldn't get them correlated in my mind into any kind of a consistent whole at all. For a long time I climbed over some huge metal framework; I ran into moving things that grew larger and disappeared; I struggled through a jungle of some soft, green, vegetable stuff. Just all of a sudden I made up my mind that I'd never find Sheila.

"She might be within a foot of me all the time, yet I couldn't get to her, because I couldn't see out of three dimensions. I yelled her name until I was hoarse and my head throbbed, but nothing happened. I grew panicky and decided I wanted to go back. I pulled on the rope and dragged myself toward the direction from which it came; sometimes I slid rapidly toward it; at others I could feel myself dragging my entire weight with my arms. Then I could go no further, pull as I might. It seemed like trying to reach an inch higher than you really can; I couldn't quite stretch that far. So I gave it six short tugs. Very quietly I tumbled out here. I haven't seen Sheila."

The professor was calm. His face was set hard.

"Either you're telling the truth or you're insane as a loon," he said, and his voice was puzzled and sincere. "Perhaps I'm crazy, too. I'm broad-minded enough to admit that is possible. I've got you charged with murder. But I'll give you a chance. What are you going to do about Sheila?"

Heagey's eyes blazed.

"You can go to hell with your chance," he roared. "I want Sheila back worse than you do. If anyone can get her back, it is myself. If you interfere, you simply guarantee that she's lost, that's all. If you want to see her again, keep your hands off! See!"

THE professor was a better man than his blustering actions might lead one to think.

"Well, I'm worried," he said shortly. "Can I help you any?"

Heagey never changed expression.

"Perhaps you can. I may need more money than I've got. Just now you can help me most by getting out of here and taking everybody with you and letting me think. I've got an idea. I'll phone you when I want something."

"Well, remember you're charged with murder, and there will be a police guard around this place."

How great and yet how small men will be under trying conditions!

Heagey left alone, sat and thought. He jumped up and ran his hands through his hair.

"God! Think of it!" he gasped. "Sheila out there alone! In that mad place! Not even a rope!"

He paced rapidly around the room. Then he seized paper and pencil and began to draw. He drew circles and ellipsoids of different sizes and laid the drawings in a row. The professor came in an hour later and found him at it.

"How do you ever expect to find her that way?" he growled peevishly.

"Shut up!" Heagey snapped, his nerves tautened into disrespect. He swept up the papers with his hand and crumpled them into the waste-basket. "No use. Can't

study four-dimensional stuff on a two-dimensional plane. Say!" he shouted roughly at the professor; "get me a hundred pounds of modeling clay up here. Quick as you can!"

The professor trotted out after it without a word, much less with any understanding of what it was about.

"Do you think you'll do it?" was his eager attitude one moment, and "if you don't you go on trial for murder," he raved a moment later.

Far into the night Heagey worked with modeling-clay, moulding the forms that had appeared in the laboratory and some of those he had seen in hyperspace. He tried to recollect the order in which the various shapes had appeared to him, and laid them in rows in that order. Late into the night he modeled and arranged and stared and studied. Near midnight the professor poked his head in the door.

"She's really gone," he moaned. "She hasn't come home. She's nowhere!" He turned on the haggard Heagey. "The policemen are on the job, so don't try to get away. But I'm offering five thousand dollars to anyone who brings Sheila back."

Heagey snatched a few hours' sleep on the floor. In the morning when the professor opened the door, he was arranging clay balls and clubs into rows and staring at them. As soon as the professor's head appeared, he shouted:

"I've got it! The biggest photographs you can get of Sheila. Head and full-length both. And fast! Hurry!"

He now turned his attention to the object in the canvas sack. He untied the rope from the fourteen-ounce duck, tied the corners of the canvas together, inserted a stout stick (obtained by breaking the leg off a chair), and twisted it, squeezing the small ball of flesh unmercifully. At first sight it was a cruel looking procedure, but there was method in it. The thing began to jump back and forth excitedly. He loosened the bulk of his pressure, but kept up a steady, firm tension. His strength was sufficient to hold it fairly steady. Suddenly he loosened all pressure. The mass of flesh suddenly grew larger and the satisfied expression in Heagey's face showed that was what he was working for. Just as when you push hard against someone and then suddenly let go: he falls toward you.

He persisted steadily along this line. When the cross-section increased in size he held it loosely, patted it gently, and even talked soothingly. As soon as it started to decrease, he screwed up his stick and bore down on it remorselessly. For an hour he wrestled. Then the professor entered with two 16 by 20 photographs taken out of frames.

"Wait!" shouted Heagey peremptorily. "Stand there and hold 'em." He twisted up his stick again, held it, and loosened it; and was rewarded by seeing the barrel-shaped mass appear; then two long, cylindrical bodies beside it, covered with metal-mesh.

"What's your idea?" the professor asked.

"Don't bother me!" Heagey panted irritably. "And don't move. I might need you any minute."

Finally the thing decreased in size again; but this time Heagey seemed satisfied with it. He removed the

canvas sack. There was an irregular sphere the size of a bucket. Over its surface were queer patches, glassy places, and iridescent, rainbow-like spots that changed color and looked deep.

"Quick now, the pictures!"

Heagey set up the pictures in front of the thing, as if to show them to it. The professor stared at him as he would at a silly child. Heagey suddenly hit himself in the side of the head with his fist.

"What a prize fool! I keep on being a fool!" he shouted. He turned savagely on the professor:

"Get me the two best fellows out of the fine-arts department. Quick! Sculptors!"

If the professor thought Heagey was crazy, nevertheless some glimmer of hope of rescuing Sheila lent him willingness and speed of thinking. He scolded rapidly into the telephone for a few minutes, repeating the word emergency several times. Then he started down the driveway, taking a policeman with him.

HEAAGEY was feverishly busy. He seemed to be bringing every object in the room that could be conveniently carried, to set before the unearthly specimen he had there. He seemed to be showing it things. He acted for all the world like some ignorant, superstitious savage, bringing things to his god. Books, chairs, hats and coats, mathematical medals, hammers and wrenches, one thing after another; he held them up in front of it for a while and tossed them aside on the growing heap. When the two sculptors arrived, he barked his directions at them, and continued what seemed his silly efforts to entertain the object in front of him by showing it everything he could find. At least it remained quiet and unchanged.

The sculptors, infected with his determination, worked rapidly. First there was a model of a heavy, bulging man, with his foot caught in a hole like a coal-chute, and held fast by a square lid. Then from the pictures a model of Sheila; considering the speed with which it was made, it was a wonderful thing, with her pointed chin and curly hair all true to life. Then a rough model of Heagey.

Heagey set the models down in front of the iridescent, patchy Thing and played puppets with the models; went through a regular dramatic performance with them. The models of Sheila and himself stood near the man caught in the trap-door. The imprisoned man struggled and knocked Sheila over and she rolled away; she fell down off the surface of the block to a lower level. The imprisoned man continued to struggle, and the model of Heagey searched around, but could not get past the edge of the block.

Then, very impressively motioning toward the Thing,

as though he really believed it was looking, Heagey made the model of the imprisoned man lean over and pick up Sheila, and hand her over to the model of himself. The model of himself held on to Sheila, and raised the trap-door that imprisoned the bulging man, who hopped out of the hole and hastened away. That was the little show that Heagey put on with the yard-high clay models.

The patchy sphere changed suddenly. First it shrank and then it swelled; then there were three or four things moving back and forth. And suddenly, there stood Sheila!

Pale and distracted and wan she looked; and she swayed as she looked blankly around. Then her eyes widened and she gave a little scream; but a look of peace and content spread over her features. By the time Heagey was at her side, she fell limply into his arms.

"One moment, dear," he said gently as he laid her down carefully in the arm-chair. The professor was down on the floor beside her in a moment, watching her fluttering eyelids.

"Dad?" she breathed. "I'm all right."

Heagey stepped quickly to his switches and threw the big one in and out again. Again came the crash cut short, and the sensation of movement. And the Thing was gone. There was nothing left of it at all.

"Did you let the thing go?" the professor reproved querulously.

"I had to," Heagey snapped. "It was a promise—for finding Sheila."

The professor was sitting on the floor, writing a check.

"Do you think you deserve this?" he said testily. He was merely trying to hide his emotion. "You won't get it until you prove it. Explain how you did this!"

Heagey dropped into a chair, looking exhausted to the limit.

"I reasoned from the things I saw Out There that this creature must be intelligent. There were buildings, machines, and leather and metal-webbing. So I made models and tried to deduce its shape. Somewhere on it there must be a head and eyes. You saw how I coaxed it 'through' this 'space' of ours until the head was cut by our 'space' and the eyes could see us. Then I told it what I wanted it to do with models—just as I would explain things to you by means of drawings on a sheet of paper.

"Now do you believe there are four dimensions?" Heagey demanded by way of vengeance.

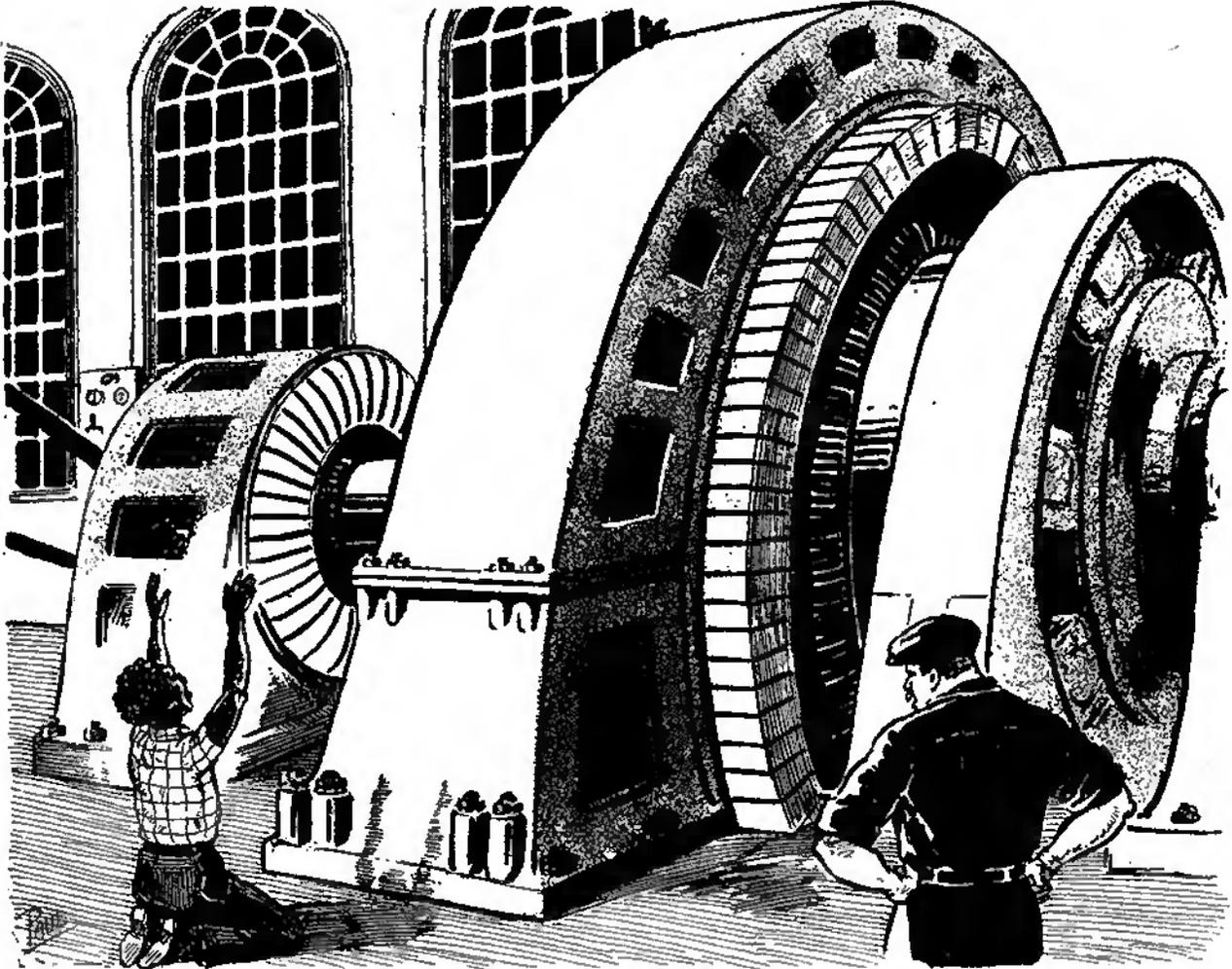
"I'm. Do you?" the professor countered.

"Four? I'm convinced there are a dozen or a thousand dimensions!"

The LORD of the DYNAMOS

By H. G. Wells

Author of: "The Time Machine," "When the Sleeper Wakes," etc.



Azuma-ri obeyed at the time, but later he was caught bowing before the Lord of the Dynamos.

THE chief attendant of the three dynamos that buzzed and rattled at Camberwell, and kept the electric railway going, came out of Yorkshire, and his name was James Holroyd. He was a practical electrician, but fond of whisky, a heavy, red-haired brute with irregular teeth. He doubted the existence of the Deity, but accepted Carnot's cycle, and he had read Shakespeare and found him weak in chemistry. His helper came out of the mysterious East, and his name was Azuma-zi. But Holroyd called him Pooh-bah. Holroyd liked a nigger help because he would stand kicking—a habit with Holroyd—and did not pry into the machinery and try to learn the ways of it. Certain odd possibilities of the negro mind brought into abrupt

contact with the crown of our civilization, Holroyd never realized, though just at the end he got some inkling of them.

To define Azuma-zi was beyond ethnology. He was, perhaps, more negroid than anything else, though his hair was curly rather than frizzy, and his nose had a bridge. Moreover, his skin was brown rather than black, and the whites of his eyes were yellow. His broad cheek-bones and narrow chin gave his face something of the viperine V. His head, too, was broad behind, and low and narrow at the forehead, as if his brain had been twisted round in the reverse way to a European's. He was short of stature and still shorter of English. In conversation he made numerous odd noises of no known marketable value, and his infre-

HERE is an excellent study in psychology by the well-known author. Mr. Wells has injected some new ideas into this story, and although it is of a very short variety, it nevertheless is an exceedingly absorbing tale. It ranks high with Mr. Wells' other short stories.

quent words were carved and wrought into heraldic grotesqueness. Holroyd tried to elucidate his religious beliefs, and—especially after whisky—lectured to him against superstition and missionaries. Azuma-zi, however, shirked the discussion of his gods, even though he was kicked for it.

Azuma-zi had come, clad in white but insufficient raiment, out of the stoke-hole of the *Lord Clive*, from the Straits Settlements and beyond, into London. He had heard, even in his youth, of the greatness and riches of London, where all the women are white and fair, and even the beggars in the streets are white, and he had arrived, with newly-earned gold coins in his pocket, to worship at the shrine of civilization. The day of his landing was a dismal one; the sky was dun, and a wind-worried drizzle filtered down to the greasy streets, but he plunged boldly into the delights of Shadwell, and was presently cast up, shattered in health, civilized in costume, penniless, and, except in matters of the direst necessity, practically a dumb animal, to toil for James Holroyd, and to be bullied by him in the dynamo shed at Camberwell. And to James Holroyd bullying was a labor of love.

There were three dynamos with their engines at Camberwell. The two that have been there since the beginning are small machines; the larger one was new. The smaller machines made a reasonable noise; their straps hummed over the drums, every now and then the brushes buzzed and fizzled, and the air churned steadily, whoo! whoo! whoo! between their poles. One was loose in its foundations and kept the shed vibrating. But the big dynamo drowned these little noises altogether with the sustained drone of its iron core, which somehow set part of the ironwork humming. The place made the visitor's head reel with the throb, throb, throb of the engines, the rotation of the big wheels, the spinning ball-valves, the occasional spittings of the steam, and over all the deep, unceasing, surging note of the big dynamo. This last noise was, from an engineering point of view, a defect, but Azuma-zi accounted it unto the monster for mightiness and pride.

If it were possible, we would have the noises of that shed always about the reader as he reads, we would tell all our story to such an accompaniment. It was a steady stream of din, from which the ear picked out first one thread and then another; there was the intermittent snorting, panting, and seething of the steam engines, the suck and thud of their pistons, the dull beat on the air as the spokes of the great driving wheels came round, a note the leather straps made as they ran tighter and looser, and a fretful tumult from the dynamos; and, over all, sometimes inaudible, as the ear tired of it, and then creeping back upon the senses again, was this trombone note of the big machine. The floor never felt steady and quiet beneath one's feet, but quivered and jarred. It was a confusing, unsteady place, and enough to send anyone's thoughts jerking into odd zigzags. And for three months, while the big strike of the engineers was in progress, Holroyd, who was a blackleg, and Azuma-zi, who was a mere black, were never out of the stir and eddy of it, but slept and fed in the little wooden shanty between the shed and

the gates.

Holroyd delivered a theological lecture on the text of his big machine soon after Azuma-zi came. He had to shout to be heard in the din. "Look at that," said Holroyd; "where's your 'eathen idol to match 'im?" And Azuma-zi looked. For a moment Holroyd was inaudible, and then Azuma-zi heard: "Kill a hundred men. Twelve per cent. on the ordinary shares," said Holroyd, "and that's something like a Gord."

Holroyd was proud of his big dynamo, and expatiated upon its size and power to Azuma-zi until heaven knows what odd currents of thought that and the incessant whirling and shindy set up within the curly black cranium. He would explain in the most graphic manner the dozen or so ways in which a man might be killed by it, and once he gave Azuma-zi a shock as a sample of its quality. After that, in the breathing-times of his labor—it was heavy labor, being not only his own, but most of Holroyd's—Azuma-zi would sit and watch the big machine. Now and then the brushes would sparkle and spit blue flashes, at which Holroyd would swear, but all the rest was as smooth and rhythmic as breathing. The band ran shooting over the shaft, and ever behind one, as one watched, was the complacent thud of the piston. So it lived all day in this big airy shed, with him and Holroyd to wait upon it; not prisoned up and slaving to drive a ship as the other engines he knew—mere captive devils of the British Solomon—had been, but a machine enthroned. Those two smaller dynamos Azuma-zi by force of contrast despised; the large one he privately christened the Lord of the Dynamos. They were fretful and irregular, but the big dynamo was steady. How great it was! How serene and easy in its working! Greater and calmer even than the Buddhas he had seen at Rangoon, and yet not motionless, but living! The great black coils spun, spun, spun, the rings ran round under the brushes, and the deep note of its coil steadied the whole. It affected Azuma-zi queerly.

AZUMA-ZI was not fond of labor. He would sit about and watch the Lord of the Dynamos while Holroyd went away to persuade the yard porter to get whisky, although his proper place was not in the dynamo shed but behind the engines, and, moreover, if Holroyd caught him skulking he got hit for it with a rod of stout copper wire. He would go and stand close to the colossus, and look up at the great leather band running overhead. There was a black patch on the band that came round, and it pleased him somehow among all the clatter to watch this return again and again. Odd thoughts spun with the whirl of it. Scientific people tell us that savages give souls to rocks and trees—and a machine is a thousand times more alive than a rock or a tree. And Azuma-zi was practically a savage still; the veneer of civilization lay no deeper than his slop suit, his bruises, and the coal grime on his face and hands. His father before him had worshipped a meteoric stone, kindred blood, it may be, had splashed the broad wheels of Juggernaut.

He took every opportunity Holroyd gave him of touching and handling the great dynamo that was

fascinating him. He polished and cleaned it until the metal parts were blinding in the sun. He felt a mysterious sense of service in doing this. He would go up to it and touch its spinning coils gently. The gods he had worshipped were all far away. The people in London hid their gods.

At last his dim feelings grew more distinct, and took shape in thoughts, and at last in acts. When he came into the roaring shed one morning he salaamed to the Lord of the Dynamos, and then, when Holroyd was away, he went and whispered to the thundering machine that he was its servant, and prayed it to have pity on him and save him from Holroyd. As he did so a rare gleam of light came in through the open archway of the throbbing machine-shed, and the Lord of the Dynamos, as he whirled and roared, was radiant with pale gold. Then Azuma-zi knew that his service was acceptable to his Lord. After that he did not feel so lonely as he had done. And even when his work time was over, which was rare, he loitered about the shed.

Then, the next time Holroyd maltreated him, Azuma-zi went presently to the Lord of the Dynamos and whispered, "Thou seest, O my Lord!" and the angry whirr of the machinery seemed to answer him. Thereafter it appeared to him that whenever Holroyd came into the shed a different note came into the sounds of the dynamo. "My Lord bides his time," said Azuma-zi to himself. "The iniquity of the fool is not yet ripe." And he waited and watched for the day of reckoning. One day there was evidence of short circuiting, and Holroyd, making an unwary examination—it was in the afternoon—got a rather severe shock. Azuma-zi from behind the engine saw him jump off and curse at the peccant coil.

"He is warned," said Azuma-zi to himself. "Surely my Lord is very patient."

Holroyd had at first initiated his "nigger" into such elementary conceptions of the dynamo's working as would enable him to take temporary charge of the shed in his absence. But when he noticed the manner in which Azuma-zi hung about the monster, he became suspicious. He dimly perceived his assistant was "up to something," and connecting him with the anointing of the coils with oil that had rotted the varnish in one place, he issued an edict, shouted above the confusion of the machinery, "Don't 'ee go nigh that big dynamo any more, Pooh-bah, or a'll take thy skin off!" Besides, if it pleased Azuma-zi to be near the big machine, it was plain sense and decency to keep him away from it.

Azuma-zi obeyed at the time, but later he was caught bowing before the Lord of the Dynamos. At which Holroyd twisted his arm and kicked him as he turned to go away. As Azuma-zi presently stood behind the engine and glared at the back of the hated Holroyd, the noises of the machinery took a new rhythm, and sounded like four words in his native tongue.

It is hard to say exactly what madness is. I fancy Azuma-zi was mad. The incessant din and whirl of the dynamo shed may have churned up his little store of knowledge and big store of superstitious fancy at last, into something akin to frenzy. At any rate, when the idea of making Holroyd a sacrifice to the Dynamo

Fetich was thus suggested to him, it filled him with a strange tumult of exultant emotion.

That night the two men and their black shadows were alone in the shed together. The shed was lit with one big arc light that winked and flickered purple. The shadows lay black behind the dynamos, the ball governors of the engines whirled from light to darkness, and their pistons beat loud and steady. The world outside seen through the open end of the shed seemed incredibly dim and remote. It seemed absolutely silent, too, since the riot of the machinery drowned every external sound. Far away was the black fence of the yard with gray shadowy houses behind, and above was the deep blue sky and the pale little stars. Azuma-zi suddenly walked across the center of the shed above which the leather bands were running, and went into the shadow by the big dynamo. Holroyd heard a click, and the spin of the armature changed.

"What are you dewin' with that switch?" he bawled in surprise. "Hain't I told you——"

Then he saw the set expression of Azuma-zi's eyes as the Asiatic came out of the shadow towards him.

In another moment the two men were grappling fiercely in front of the great dynamo.

"You coffee-headed fool!" gasped Holroyd, with a brown hand at his throat. "Keep off those contact rings." In another moment he was tripped and reeling back upon the Lord of the Dynamos. He instinctively loosened his grip upon his antagonist to save himself from the machine.

THE messenger, sent in furious haste from the station to find out what had happened in the dynamo shed, met Azuma-zi at the porter's lodge by the gate. Azuma-zi tried to explain something, but the messenger could make nothing of the black's incoherent English, and hurried on to the shed. The machines were all noisily at work, and nothing seemed to be disarranged. There was, however, a queer smell of singed hair. Then he saw an odd-looking crumpled mass clinging to the front of the big dynamo, and, approaching, recognized the distorted remains of Holroyd.

The man stared and hesitated a moment. Then he saw the face, and shut his eyes convulsively. He turned on his heel before he opened them, so that he should not see Holroyd again, and went out of the shed to get advice and help.

When Azuma-zi saw Holroyd die in the grip of the great dynamo he had been a little scared about the consequences of his act. Yet he felt strangely elated, and knew that the favor of the Lord Dynamo was upon him. His plan was already settled when he met the man coming from the station, and the scientific manager who speedily arrived on the scene jumped at the obvious conclusion of suicide. This expert scarcely noticed Azuma-zi, except to ask a few questions. Did he see Holroyd kill himself? Azuma-zi explained he had been out of sight at the engine furnace until he heard a difference in the noise from the dynamo. It was not a difficult examination, being untingered by suspicion.

The distorted remains of Holroyd, which the electri-

cian removed from the machine, were hastily covered by the porter with a coffee-stained table-cloth. Somebody, by a happy inspiration, fetched a medical man. The expert was chiefly anxious to get the machine at work again, for seven or eight trains had stopped midway in the stuffy tunnels of the electric railway. Azuma-zi, answering or misunderstanding the questions of the people who had by authority or impudence come into the shed, was presently sent back to the stoke-hole by the scientific manager. Of course a crowd collected outside the gates of the yard—a crowd, for no known reason, always hovers for a day or two near the scene of a sudden death in London—two or three reporters percolated somehow into the engine-shed, and one even got to Azuma-zi; but the scientific expert cleared them out again, being himself an amateur journalist.

Presently the body was carried away, and public interest departed with it. Azuma-zi remained very quietly at his furnace, seeing over and over again in the coals a figure that wriggled violently and became still. An hour after the murder, to any one coming into the shed, it would have looked exactly as if nothing remarkable had ever happened there. Peeping presently from his engine-room, the black saw the Lord Dynamo spin and whirl beside his little brothers, and the driving wheels were beating round, and the beating engines went thud, thud, exactly as it had been earlier in the evening. After all, from the mechanical point of view, it had been a most insignificant incident—the mere temporary deflection of a current. But now the slender

form and slender shadow of the scientific manager replaced the sturdy outline of Holroyd traveling up and down the lane of light upon the vibrating floor under the straps between the engines and the dynamos.

“Have I not served my Lord?” said Azuma-zi inaudibly, from his shadow, and the note of the great dynamo rang out full and clear. As he looked at the big whirly mechanism, the strange fascination of it that had been a little in abeyance since Holroyd’s death resumed its sway.

Never had Azuma-zi seen a man killed so swiftly and pitilessly. The big humming machine had slain its victim without wavering for a second from its steady beating. It was indeed a mighty god.

The unconscious scientific manager stood with his back to him, scribbling on a piece of paper. His shadow lay at the foot of the monster.

Was the Lord Dynamo still hungry? His servant was ready.

Azuma-zi made a stealthy step forward; then stopped. The scientific manager suddenly stopped writing, and walked down the shed to the endmost of the dynamos, and began to examine the brushes.

Azuma-zi hesitated, and then slipped across noiselessly into the shadow by the switch. There he waited. Presently the manager’s footsteps could be heard returning. He stopped in his old position, unconscious of the stoker crouching ten feet away from him. Then the big dynamo suddenly fizzled, and in another moment



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 1041 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.



Azuma-zi had sprung out of the darkness upon him.

First, the scientific manager was gripped round the body and swung towards the big dynamo, then, kicking with his knees and forcing his antagonist's head down with his hands, he loosened the grip on his waist and swung round away from the machine. Then the black grasped him again, putting a curly head against his chest, and they swayed and panted as it seemed for an age or so. Then the scientific manager was impelled to catch a black ear in his teeth and bite furiously. The black yelled hideously.

They rolled over on the floor, and the black, who had apparently slipped from the vice of the teeth or parted with some ear—the scientific manager wondered which at the time—tried to throttle him. The scientific manager was making some ineffectual efforts to claw something with his hands and to kick, when the welcome sound of quick footsteps sounded on the floor. The next moment Azuma-zi had left him and darted towards the big dynamo. There was a splutter amid the roar.

The officer of the company who had entered stood staring as Azuma-zi caught the naked terminals in his hands, gave one horrible convulsion, and then hung

motionless from the machine, his face violently distorted.

"I'm jolly glad you came in when you did," said the scientific manager, still sitting on the floor.

He looked at the still quivering figure. "It is not a nice death to die, apparently—but it is quick."

The official was still staring at the body. He was a man of slow apprehension.

There was a pause.

The scientific manager got up on his feet rather awkwardly. He ran his fingers along his collar thoughtfully, and moved his head to and fro several times.

"Poor Holroyd! I see now." Then almost mechanically he went towards the switch in the shadow and turned the current into the railway circuit again. As he did so the singed body loosened its grip upon the machine and fell forward on its face. The core of the dynamo roared out loud and clear, and the armature beat the air.

SO ended prematurely the worship of the Dynamo Deity, perhaps the most short-lived of all religions. Yet withal it could at least boast a Martyrdom and a Human Sacrifice.

THE END.

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a 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. In what geological period of the world did the first glacial age occur? (See page 980.)
2. In what period did the second glacial age occur? (See page 980.)
3. What was the characteristic of the archeozoic age? (See page 980.)
4. Was there more than one ice age on our earth? (See page 980.)
5. What was the vegetation of the carboniferous era? (See page 982.)
6. What effect might the absence of tides have on the rotation of the earth? (See page 982.)
7. Where does the Equatorial current, the source of the Gulf Stream, get its warm waters? (Page 985.)
8. Can you describe the Gulf Stream? (Page 987.)
9. Is it suspected that there is a planet further from the Sun than Neptune? (See page 1000.)
10. Can you describe a saurian of the later Cretaceous? (See page 1024.)
11. What was the condition of our continent in the above period? (See page 1024.)
12. How is the magnifying power of a telescope indicated? (See page 1044.)
13. Can a sheet of gold-leaf be considered as only two-dimensional? (See page 1050.)
14. What are dreams attributed to and is precognition to be found in them? (See page 1055.)

The SIXTH GLACIER

By Marius

Author of: "Vandals from the Moon"

What Went Before:

STEPHEN REYNARD DUNRAVEN, retired street-car magnate and amateur paleontologist, during one of his numerous expeditions in northern Mexico, discovers, among the Indian Aztec ruins there, some inscribed tablets, which finally deciphered, give warning to the world of another glacial period. After much study and research and mathematical calculation, the retired millionaire finds that the impending danger is very close, because the earth was even then approaching the frigid region of interstellar space.

Naturally, almost every scientific journal and newspaper ignores Dunraven's findings, except to pooh-pooh or ridicule them and him.

Bernard Ilmore Bulger, editor-in-chief of the "Scientific News," arrives at the point, where he begins to believe there might be something to the old man's ravings after all, and sends his best correspondent, Bender, to interview Dunraven. Bender has easy access to the irate, amateur scientist's home on account of the existing friendship between him and Clara, Dunraven's only daughter.

Not very long after the interview, belief in the coming danger is forced on the world, for the advancing sheets of ice from both poles, moving toward the equator, begin their

work of destruction with startling speed. News from Copenhagen apprises the world that their Arctic winter is being unduly ushered in, though it is only June. Europe and Asia and the Hudson Bay vicinity are heard from next. Everybody is fleeing toward the equator.

Bender, as correspondent for the "Scientific News" must stay on in New York until very near the bitter end. Dunraven and his daughter go back to the ruins in Mexico, when all he can possibly do in New York is ended. There in northern Mexico, the amateur paleontologist plans to continue with his pet investigations.

New York, London and even Italy are completely submerged beneath the onrushing mountains of ice and still the glaciers keep moving closer and closer to the tropics—which have now become cool and habitable. Even San Francisco has become an Arctic country.

Bender is finally forced to join the exodus gulf-ward, and answers a note from Dunraven with a personal visit to him. Ido, Dunraven's Oriental servant, is asked to bring tea while the two men begin a discussion of the matter uppermost in everybody's mind.

PART II

CHAPTER IX (Continued)

The World at Bay

IDO entered with hot tea and rum, a fit beverage for such a cold climate.

"I've hopes for the best," continued my host, "but of that later. At present, I have something else for you and the readers of the *Scientific News*. First, we shall proceed to the ruins. Next, you shall wire enough to Tampa to fill a page or two of your magazine. I hope old Hillsboro will be contrite enough to devote that much to the cause of a very humble dilettante of science with a foolish palaeontological twist of mind. Paul is here and I will endeavor to talk him into the notion of driving us over to the digging, which, I must confess, he is never over-eager to do."

I trudged alongside of him in silence and nodded to Paul as I took the back seat of a mud beplastered sedan of a more or less ancient vintage. The corpulent amateur-scientist sat down heavily beside me saying that a back seat was

more comfortable. I smiled inwardly as I thought of his fondness for me as a good listener.

The sun was already reddening the western skyline,

broken in a hundred places by hog-back peaks, when we started for the huge excavation. The trip would last four or five hours and it would be dark by the time we arrived. We must wait there overnight and only on the morrow delve into the secrets of the mystery city of the past.

Stephen Dunraven was a veritable fountain of words. To-day his topic was glaciers and he began to talk the moment that Paul threw in the car's clutch and a noisy grating told that we were off. I was a very interested listener.

"The first ice-age," he told me, "came many millions of years ago during the long, fiery youth of our little globe, the Archeozoic, which was bereft of all life, eons before the waters swarmed with life.

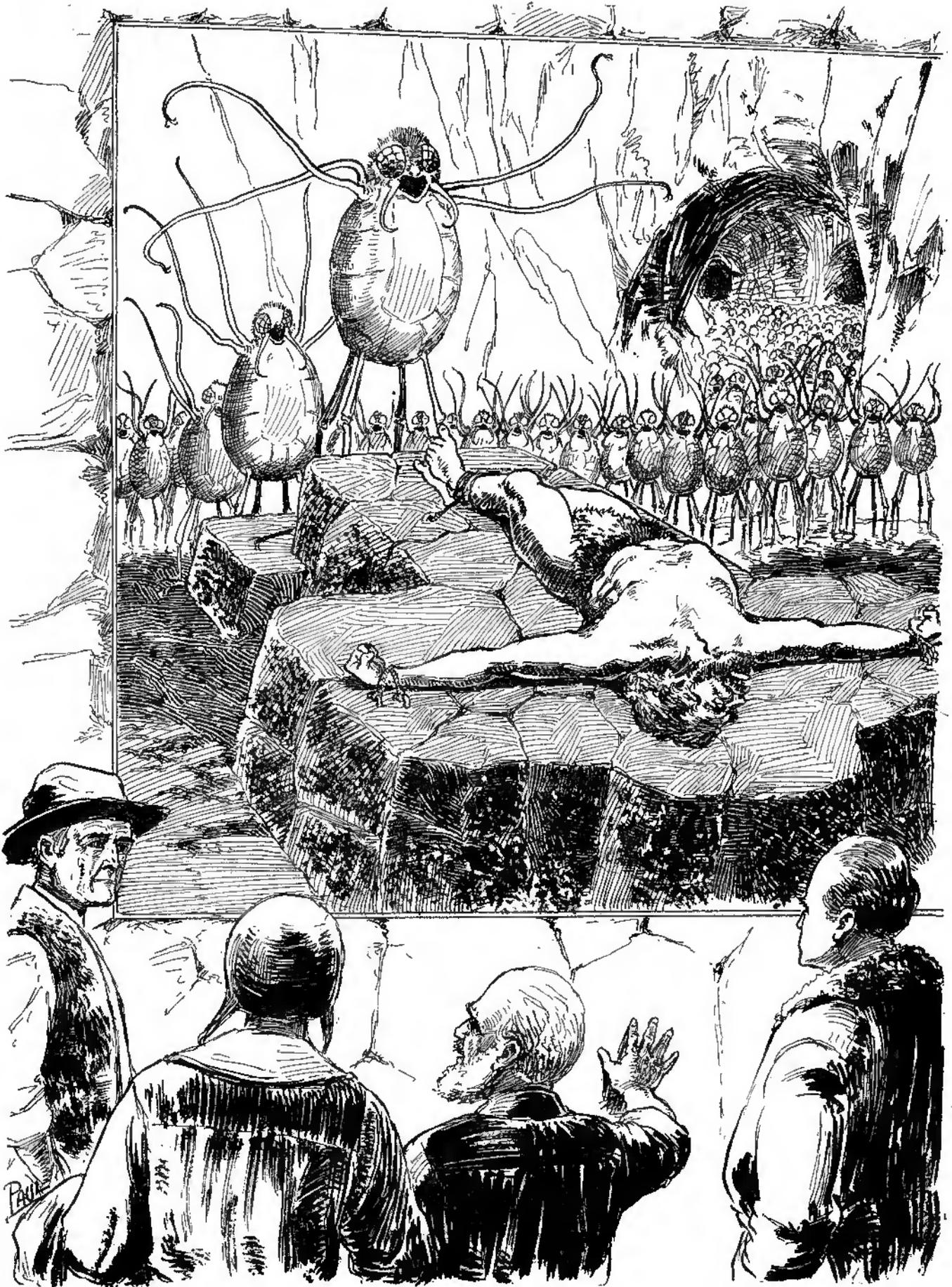
"Then came the second ice-age at the beginning of the Paleozoic, when the world still had summers from

pole to pole as the fossil corals found in the frigid zones mutely tell us. The globe was vast swamp and a vaster sea, and sponges, jelly-fish, and star-fish were all alone in life. Land was at a premium, hence there was no land-life.

"And from then on each geological era had an ice-age that lasted for a million years and was divided into periods of glaciation as we passed through the frigid belt, only to pass through

If you have read the story thus far, you must have become impressed with the fact that the author has taken extraordinary pains to make this an outstanding story, as far as good scientific detail and cleverness in narration are concerned. The closing part of the story is no less absorbing than what has gone before, and the solution offered by the author is no less impossible than the Sixth Glacier itself.

It is one of these exceedingly rare stories that will become better with time and will be spoken of in the years to come.



A series of huge eyes, Argus-like, a blunt nose, a cavernous, Gargantuan mouth, and a pair of long, delicate mandibles were all parts of his head. Four long arms, as long and as slender as were the legs, protruded from the oval beneath the head. Judging by the sacrificed troglodyte, the spider must have been at least three feet tall.

it again in another one hundred some odd thousand years. Thus five or six times during each ice-age the glaciers from the two poles would come north and south. Then would come eons when all would be iceless and summer again as our little solar groups would vagon through spaces where no frigid belt played its pranks. And all the time our terrestrial orb was slowly cooling off to make a home for humanity possible, until some day the fatal journey through the frigid belt would come and mark a 'finis' to it all, drawing a curtain of eternity on this short, tragic drama of terrestrial life.

"Immense coal-forests of cycads and giant forms, the sole vegetation of the Carbonaceous Period, absorbed much of the carbon dioxide of the then thick atmosphere of our earth and helped pave a way for the ice. And then when the glacier came, these tender trees died; ages later upheavals covered and buried them under the newer lands, and to-day they are our coal-mines. Yes, the coal that you now burn in your furnace was nothing more than carbon dioxide and sunshine in the Jurassic air.

"**A**S there were immense forests in those days so too there were immense beasts, monstrous gargoyle-visaged, brainless behemoths, such as opium eaters see in opium dreams, and then when the first cold days came fast upon the heels of the warm and murky Coal-Age they slew these dragons and made the existence of man possible on the surface of the earth. Yes, Bender, it is a paradox, but the ice ages had helped mankind and its advent toward a civilized life by allowing only the fittest to survive their terrible rigors. Nature slew the giant beasts with whom the poor weaponless primitive man would never have been able to compete, thinned the air for his tenderer lungs, and destroyed the huge miasmatic plants to make room for his forests and plains. Then again, the last ice-age socialized him, the primordial and savage one, and made him gregarious. It was around the fires built for warmth and in the caves sought for wind-breaks that home-life and clan-life began. In truth the glacier took the ape off the tree-tops and setting him on his hind legs made a man. On the ground, he had to use his brain and thus the brain developed, and in time the hunted one became the hunter and the master of the world. It was just another way that Nature had of keeping up the nobler race. That is just what the Grand Gardener is doing to-day.

"And yet the ice-ages grow severer and longer each time. This one is merely a foretaste of the endless cold that is to come and which one day shall cover all, and leave our little globe a cold, lifeless orb hurtling through space. Our terrestrial divisions of temperature into torrid, temperate, and frigid zones are very recent, for it was only at the end of the Cretaceous or Chalk Period that these divisions began. Before that all was summer the year round. No, I do not think that we shall ever regain the temperatures of those yestereons of yore. Cold days have followed each ice-age and our little orb is steadily cooling down. In time an eternal winter shall take the place of the

eternal summer, between which two our little span of humanity is just a transitive period of springtime weather.

"A great average fall of temperature is not necessary to an ice-age. Of course, there is a sudden and enormous drop as the first wall of ice hits, heralded in by the storm due to a mass of clouds that the ice is pushing before it, congealed particles of moisture in the atmosphere. I would not be one whit surprised to find human beings even now alive on the jagged back of the moving fields of ice, maybe entire settlements of overtaken fugitives which the glacier had spared for a grimmer fate and would not release. Igloo villages may have sprung up where cities once had stood. This is no impossibility."

"A pretty dismal picture," I interrupted with a sardonic smile. "Anything else?"

"Oh yes, one thing more. A large part of the seas solidify and thus there are no tides. Some even fear an increase of the earth's rotation because of the lack of this tidal friction."

CHAPTER X

Here Stood a Mighty City Once

AROUND the ruins a camp had sprung. Men, women and children were everywhere. Shifty-eyed scavengers, with pinched faces, were made into human hyenas almost overnight, and fearless beggars lurked in the shadowy doorways of hovels or walked stealthily in the slush of the narrow streets. Whites, dark peons, and dark, full-blooded Indians with tattered clothes elbowed one another on the noisy, narrow streets.

"Quite a mob," Paul remarked as he zig-zagged his honking car through their midst, and they gave way reluctantly to the asthmatic sedan. "I wish they wouldn't clog up these narrow streets so much."

A quarter of an hour later we were challenged by a dark-skinned rifleman and five minutes later we were on our way into the earth's interior.

HERE stood a mighty city once. Now it was being recaptured from time and decay with its chronicles of the dead eons. It had braved the wrath of time and decay. The tall octagon-shaped tower, which the amateur scientist had so raved about, stood there, a moulded pillar of reddish brown, tall, silent, and austere, like a captured prince, among some tiny comrades.

Everywhere before our eyes, north, east, south and west ran long straight, narrow streets, reminiscent of Chinese cities. Scantly clothed working men, some brown, some white, appeared like an army of busy ants in the bottom of a huge pit. Ancient walls, battered by time and hoary with age, saw their first daylight in many a dark century as pick, shovel and crowbar brought them forth to vision. Beside me stood the founder of it all, Stephen Dunraven, the avatist of a Napoleon and a scientific Bedouin.

An old man advanced to meet us, dust-covered, feeble of gait, snow-white of beard, a very old man who appeared as if he long ago had forgotten to answer

the endless roll-call of Time—a very imposing old man.

"Professor von Moritz, from Munich," Paul was whispering in my ear, and a moment later the aged savant confronted us, panting like an asthmatic after a severe spasm.

"Ach, so it is you," he chortled after a somewhat lengthy scrutiny of the amateur paleontologist. "It's so good to see you." His voice was cracked and very low.

We shook hands; his was a cracked and withered hand, like a tiny ancient parchment.

"Wonderful, wonderful," ejaculated the little German, "a lost city of the people who lived in the morning of the world."

I allowed my eyes to turn sideways and gaze at the bulky figure of my host, the amateur scientist and ex-millionaire traction king, who had lost his all, a monarch's ransom, under a mile of ice. He was jubilant.

The diminutive scholar from Munich was talking. "What a strange world this is," he philosophized in a low, squeaky tone, "what a strange world. Civilizations upon civilizations. First spiders and then men. God alone knows what was before the arachnidia.

"Spiders built this city, Bender," the paleontologist broke in abruptly. "Huge spiders, civilized arachnidia. They used us as their slaves, or rather beasts of burden. Of course, by us, I mean the early dawn man, the Pithecanthropus, who was more ape than man, with big teeth and little brain.

"Yes, the professor is right. Civilizations over civilizations—and who can truly say for how far back. Rational mammalia to-day, only a higher type of ape, rational bugs in a yester-eon. Rational what next? Nothing lasts in Nature. Everything goes to make room for others born of the already used material. It's just like a man with a mass of clay. He must destroy the form he just made before he can make another, a better one, perhaps, and so on *ad infinitum*. Why? Who can say? And, like the fate of these spider people, our two-legged forms, too, shall go, for man is by no means the *ne plus ultra* of life and creation. He is just the beginning of something which our feeble minds cannot comprehend.

"These spiders were too weak to withstand the rigors of the glacier very long, though they did survive long enough to record it and give posterity a warning of a sixth catastrophe to come. Little did they realize at that time the kind of posterity that would follow and become humanized—almost Ho-hum. *Sic transit gloria mundi*. Thus passes away earthly glory. Just as if our horses and mules a million years from now were to become noble enough to erect cities and organize civilizations."

We had by now reached the base of the tall brick tower, labor of unwilling hands many years ago. A tousled-headed man in very dirty overalls came forward to meet us.

"Mr. Brooks has been waiting for you all day yesterday," he addressed Stephen Dunraven. "He says that he is finished with the washing of the big iron tablet, the one with the hole on top."

"Good boy, Frank. I'll find Brooks soon. He can't

be far away. How about that sub-cellar? Is it clear?"

"All clear, sir."

"Anything new?"

"No, nothing."

And with this much the overalled one lingered a bit, but then, upon seeing that no more attention was being paid to him, he turned around and walked away.

MR. BROOKS turned out to be a tall, thin, wry-faced individual and the possessor of a rather shrill voice. He wore a much-abused leather jerkin, like the kind used among the truck drivers and teamsters. His head was long and bald and his age must certainly have hovered in the neighborhood of fifty. Before the Sixth Glacier had driven him to the south and safety, he had been a professor of chemistry in a large mid-western university.

Archeology, however, was his pet hobby, and he had to his credit one or two brochures that dealt with the civilizations of the ancient races. He himself appeared to be almost like a mummy that had suddenly been by some kind of black magic, miraculously brought back to life. He seemed to be fresh from the case. At present he was in charge of a crew of laborers, all of them busy with rags, chemicals and chisels, bringing forth to light and to knowledge, the lore upon the metallic and stone pages of the history books of the spider peoples, whose culture had once upon a time lingered here.

"Morning folks," was the way in which he greeted us. Then, turning toward Stephen Dunraven, "It's done."

"Good. Where is it?"

"Right here. I'll lead the way." And with that he moved ahead of us with almost elephantine dignity, such a contrast to his worn, cowhide vest.

Engraved on a huge plate of iron was the picture of a spider. He was performing some sort of rite on a low altar upon which lay a monkey-visaged man. He was not the kind of a spider that you or I would have expected to see. Imagine, if you can, a flat, oval body, almost human in its upright position, standing erect on four long, thin legs. A grotesque head was popped almost neckless upon this oval ball, a gargoyle head out of a hashish-eater's dream. A series of huge eyes, Argus-like, a blunt nose, a cavernous, Gargantuan mouth, and a pair of long, delicate mandibles, were all parts of his head. Four long arms, as long and as slender as were the legs, protruding from the oval beneath the head. Judging by the sacrificed troglodyte, the spider must have been at least three feet tall, a smooth-skinned arachnid, at one time Nature's highest creation on our little orb.

"Funny little fellow, with that big body and that tiny head. Wonder what he ever did to get that big half-man, half-monkey brute to obey him?" It was Paul's voice.

"Brains, brains," answered the little Teuton scholar hastily. "Brains, my dear sir. The ancient predecessor of man lacked them. He was more animal than he was human. Just look at that frontal slope on his head. Like an orang-utan, eh? Almost forty-five degrees.

And these spiders. They were of a noble race, even if only arachnidia. Astronomers, mathematicians."

We never noticed the arrival of the newcomer, a short, fat, middle-aged Mexican, whose lighter complexion showed him to be a caballero, bereft of Indian or negroid blood. His bearing was military, as was his tattered uniform. He stopped short a few feet from us, clicked his heels together with a resounding smack, and saluted. A few minutes of low conversation with Stephen Dunraven and he was leading our little group away from the age-old ruins and out of the buried city.

IT was evening; the low, uneven horizon of the west was gory with a desert sunset. From the arid hills, purple in the distance, and the haze, came the buzz of a million refugees, like disturbed hornets around their nest, and then the moon arose and the stars came out and the landscape below was caught in an atmosphere of pale light. Like a wisp of hazy smoke from an unseen fire, a cloudlet floated across the sea of ink above us, radiant in the golden glow of the full moon, for the moon shines golden on the desert. We were driving home and the cold wind added no comfort to the ride.

"Only one way," Stephen Dunraven was saying in English to the fat Mexican official. "Heat her up good and plenty. I've got a scheme. Have it already figured out on black and white in my tent. Step on it a bit, Paul, we'll soon be there and then over hot coffee out of tin cups" (I do had learned to make excellent coffee) "we'll talk things over."

IT was four hours later. Stephen Dunraven was talking. The scene was the crowded interior of his ancient khaki tent.

"Yes, gentlemen, the world is at bay. All of us are away. We'll have to tear down these artificial barriers of creed, caste and nationality and fight Nature, the one real foe. Here" (he slammed a walrus-flapper of a hand heavily down on some blueprints, almost upsetting four cups of coffee) "are the plans of a jetty, a jetty that shall make history and have much to say and do when the time comes to fight the ice. What I propose, gentlemen, is that we erect a number of huge sea walls anywhere along the African and South American coasts, where the warm equatorial ocean currents gather their torrid waters on their journey to the north. It was this same current returning from the frigid, ice-infected seas around the pole, laden with the chilling waters of the Arctic Ocean, that gave our own Atlantic seaboard, a land on one level with India, snows in the winter and frosts in the fall, and during the late springtimes, when the northlands thawed, it brought along on its crest, as it returned to the south again, the huge bergs of ice which proved a Nemesis to many a noble ship. And this gulf stream still flows, gentlemen; it still flows under the ice. It still continues to bring down the colder waters from beyond the Arctic Circle and return to the pole with what little warm water the tropics can yield now. That is the reason why London, far above the latitude of New York City, received the blast of cold only a little while before the

huge American metropolis did; that was also the reason why the aerial observers, with whom I am even now in touch, are able to report a concave dent in the huge sea of ice—hills that only a few months ago were the North Atlantic Ocean. Here the warm current of the northward-bound gulf stream pushes itself into the gigantic wall of ice.

"And there are water currents just like this one in the Atlantic Ocean south of us and in the Pacific on the other side. My proposition then would be to build a series of jetties of huge sea-walls and with each of these walls a very powerful electric heating appliance of some kind to heat the current as it goes north, and so on in relays more and more as the ice gives way, and then watch out for the icebergs heading south and the flooded lowlands. A Central African jetty will swerve the huge equatorial current, which is caused by trade winds from the east. Its boundaries are shifting ones, from its southeasterly course direct toward the north, where it will conjoin with our own Gulf Stream, which in truth is a part of it, and receiving warm-overs from a string of smaller jetties and their electric heaters, will finally reach the big jetty or sea-wall near Cuba, which then will tend to swerve it nearer to our own Atlantic coast as it journeys toward Europe, only to turn again in the far north and come south, frigid and frost-laden, from Labrador. I recognize the magnitude, gentlemen, of this monstrous undertaking which will require men, money and time galore. Of course, as we stand to-day, the ice has practically stopped and the jaws of the vice are still many miles apart; nevertheless it is still here and who can say how long it will stay when the interstellar zone of frigidity shall be passed through. The world is at bay. It is our one chance to strike."

With all attention on the speaker, who in his enthusiasm had risen to his feet, we had allowed our coffee to become cold. His words had brought us a newer springtime, a newer dawn. In my mind's eye I was building jetties, huge sea walls, everywhere, and the tropical currents, superheated in relays by huge electric coils, went north, tore asunder the hills of ice and snow, sending down as proofs the gigantic bergs of ice, and reclaimed again the homes of mankind.

CHAPTER XI

The Building of the Jetty

LOS ANGELES met its fate, an empty city, on the first day of the new year. It required five whole days for the wall of ice to pass from one end of the Californian metropolis to the other, no longer a fifty feet high advance guard of the glacier, relentless, irresistible, but a slow river of ice that had wasted all of its fury in the dreadful deeds of the past. It came very slowly and failed to crush the biggest of the buildings and covered but slightly the west coast city's deserted streets. The Sixth Glacier had already spent itself and could go no further. It stood defiant on a pair of twenty thousand mile long battle lines, a mile deep and with a jagged, icy army of reserves at its back. And now it was man's turn to strike.

Of course, the jetties would be but temporary—a much-needed relief until the last outer fringe of the frigid belt was passed, the sun's heat came down upon us as strong as of yore, and the ice receded to its polar home. Then man would come into his own again. Then, too, as the warm water currents could be only on the oceans, these and the coast lands alone would be benefited. The millions of square miles of inland plateau, high above the level of the sea, would never be affected and must remain realms of snow and ice, a waif of the boreal lords, until the happy time would come when the sun with its string of little balls shall be in the icy grip of the frigid belt no longer.

The cities, the towns and the hamlets that even now lay crushed and scattered under the shroud of white, were to us lost forevermore. When the ice will have gone and left them uncovered to sunshine once more, only the stoutest of foundations would remain to show where mankind fought with its back to the wall against this icy lash of Nature that spared neither young nor old. Fifty centuries of toil are lost to us forever. We must start all over again, gather the remnants that the glacier spared and erect better houses out of the scattered brick.

Already happy wires were coming from everywhere, wherever the brave outpost watchmen of man's stand before the glacier were posted, that the ice had halted on its marauding errands north and south. The huge jaws of the vise had failed to crush us completely. Part of the world was safe, at any rate, and even if the sun did shine down upon it through a frigid veil, and where sago and coco palm once flourished was now the home of cold winds and frosty nights, there was ample space for every man, woman and child to start life all over again.

Mexico City became the newest of world capitals. As Buluwayo in the State of Rhodesia, Equatorial Africa represented the headquarters of the peoples of Europe, and Java's swollen, disease-infested main city, Batavia, became the capital of the heterogeneous castes, races and nations of the Orient, so the peoples of the western hemisphere chose Mexico City as the home of their own temporary seat of government.

I dropped into it out of the sky one clear afternoon, only a day following the welcome news that Stephen Dunraven's versatile mind gave to an unhappy world to make men's hearts glad with reborn hope. A waiting motor car took me from the airplane grounds and brought me, an emissary with glad tidings, to the big capitol building of the American Confederacy, where the supervising triumvirate met me. Ten minutes later I was expounding the happy news, Dunraven's scheme of the jetties. The same day Congress voted and passed a bill (a bill that made the State Treasurer blink his eyes) for the building, upkeep, and manipulation of any number of jetties or sea walls and their accessory plants, to be built in many parts of the world. And the powers-that-be on the other half of the globe gladly cried "Aye" to this vote. Telegrams burnt the wires, while wireless tore the ether with tidings of the happiest of messages. That night Mexico City was a bedlam, a happy madhouse of excited men, women and chil-

dren who had suddenly realized that all hope need not be abandoned after all.

ON the shores of Gold Coast in the central part of mid-western Africa, where the deep and wide Equatorial Current gathers much of its tropical waters destined for more northern zones, the first of the jetties was started, an offspring of the mind of a once rich man who had given up the tinsel parts of life for the more solid ones of science.

I left Vera Cruz, an over-swollen port city on the first workboat to go toward Africa, an erstwhile leviathan ocean greyhound, the *Mauretania*, formerly of the Cunard Line. To-day it was the unquestioned property of the people of the world. It takes mighty cataclysms to do big deeds, and even in the making and unmaking of civilization and of worlds, every dark cloud has its silver lining.

Three weeks went by on shipboard. The *Mauretania* was a heavy-laden and over-crowded vessel, though on it the hopes of a world rested. It was bearing to the battle front to open up the war—the vanguard of the army that was to combat the glacier.

It was on board the big steamer that I made the acquaintance of Major Reginal Cummins, U. S. A., a fatal acquaintance, indeed, to me. The major was a robust man, tall and straight, hitting on the decline side of life. Long years in the uniform had given him a ramrod back that was as straight as any pine that grew in the woods, and though a heavy man with the physique of a heavyweight prize-fighter, he carried his two hundred some odd pounds as a slender Indian carries his hundred and fifty. An energetic egoist of a man, full of the vitality of animal magnetism, brown-eyed, cager, prematurely bald, forever grinning a grin that exposed an even row of very large buck teeth, he reminded me of portraits I had seen of ex-President Roosevelt. Not exactly the man that one would choose to lead, neither was he a man to put at the tail end of the ranks. The clique of nations that made up the American Confederacy had seen fit to send him as a representative to the forefront of the fight. I went along, partly in the capacity of newspaperman, and partly as viceroy of the father of the scheme. We soon struck up an acquaintanceship. It was difficult to strike up a friendship with so vain a man.

CAME the day when the pile-drivers sank the first pillar into the ooze and sand four hundred and eighty feet beneath the choppy, icy surface of the sea. How the finny denizens of the deep must have wondered at this newest intrusion of their ancient pelagic homes. Workingmen inside of huge metal rooms, veritable ten-men capacity diving bells, were dropped below the waves and from the safety of these undersea workshops started the concrete foundations of this colossal undertaking, the building of the jetty. Upwards and out of the sea rose the huge skeleton frameworks of steel on their bases of stone, the skeletal parts of the gigantic sea wall that was to turn the current and save the world. For two months, one hundred thousand pairs of hands toiled day and night in eight-hour

shifts, and one day a line of tall, straight towers of steel rose to an average of five hundred feet skyward, out of the oozy bottom of the sea. At intervals of fifty yards they were for over one hundred miles on the ocean's floor, sometimes only fifty feet beneath the crest of the waves and sometimes one thousand. Later on these towers would be connected with huge girders and these with stanchions, erecting the skeleton framework of the wall of solid concrete and reinforced by steel, one of the armies hurled against the icy foe.

Dunraven came to view his brain-child when it was but half grown, merely a long line of steel towers jutting for fifty feet out of the blue-green sea, and on and about them clustered men, vessels big and little, and man-made islets that housed the workers and their tools. He brought Clara along with him, a jubilant, girlish Clara, who never minded my frayed overalls and enjoyed my bewhiskered company in this anchored city that was fighting desperately to recover from the ice what it had stolen from the world.

That night it stormed with all the fury of an ocean tempest, yet there were four of us who sat, unmindful of it, at the rickety table in my cabin: Stephen Dunraven, his daughter Clara, Major Cummins, and myself, a proud host, over a supper of fish, bread, oleomargarine, and tea. The major was jubilant and the corpulent amateur paleontologist only mirrored him. "It will work, I'm sure," they kept repeating, as if encouraging hopes that sought to stray. Supper over, came cigars, the ubiquitous Ido, as taciturn as ever, superintending their distribution.

"I've tried a little invention of my own," said the man upon whose scheme we were working. "We can superheat with powerful coils the waters of rivers that have their mouths at the regions inundated by the glacier. I endeavored to aid the battle of the jetties with a land skirmish of my own. Thus far I have met with only the most trivial of successes. The heating, of course, was done only on a small scale, a mere experiment, but even then, even a tyro could have foretold that the heat would be dissipated by the cold atmosphere long before it reached the ice, as there was no warmer equatorial current to set it off.

At this point Ido entered with a marconigram and broke up our party. Stephen Dunraven read the message, said a few words to the grinning major concerning some shiploads of concrete, and then they left together. At the door he turned and remarked casually, "It was twenty-two below in Buenos Aires yesterday, while Rio de Janeiro, right under the equator, has hit the zero mark. Never mind the dishes, Clara, Ido will take care of them." A moment later Clara and I were alone.

ADVERSITY gives one courage and hard times make even the weakling bold. I had experienced adversity often in the last twelve months.

"Let's get married, Clara," I said, in an assumed matter-of-fact tone, as soon as the final echo of the feet of the two men on the loose planks had died away into the distance. I knew that my anxious mien belied my assumed tone. But I enjoyed my own audacity.

She did not redden. Girls like Clara never do. Besides that, the last twelve months had left a mark on her, too.

"On what?" she answered me with a question of her own and in the same tone of voice that she would have used had I asked her the time of day; only a tinge of elusiveness colored that tone and betrayed a more than casual feeling.

"On the ice." I was trying to swerve it into a comical channel. And then more seriously, "The same on which you'd marry Paul."

"Oh Paul, fiddlesticks." A pause. "I joined the Red Cross last month, Frank. That is, for active service. Ambulance driving."

"You do like Paul?"

"Well?"

"Do you?"

"Why?"

"Oh, just so. But do you?"

"I've no reason to hate him. Nor you either."

"Good little girl."

"Thanks for the pretty compliment."

"How long do you expect to stay here?"

"Until the jetty is built?" I answered my own question.

"I don't know. Father is anxious to return to his ruins in Mexico. He says that he has evidences of other civilizations even before the spider people. Paul is looking after it now—in a way. He and that little German professor, Herr,—oh, Herr whatever his name is."

"Oh pshaw. Let Paul and little Herr German professor look after the spider ruins. Why should your father waste his time there? We, the world, need him much more here. I'd like to see him stay, even if—"

"And me, too?" She spoke softly and tittered, but never looked up from her shoes.

"Yes, of course, you too."

A silence followed. Neither one of us knew what to say, for I dared no longer speak the words I thought. Ido entered with a huge dishpan in one hand and a tiny mop in the other, a miniature article on the model of the kind that housewives use upon their floors. Came the sound of tinware and of porcelain, and of running water. Clara was humming "Love's Old Sweet Song" softly to herself. I contemplated the frayed toes of my boots for a long while, but said nothing.

Stephen Dunraven, much to my delight, continued to linger on. Major Cummins, more to my delight, became his constant companion. Clara and I saw more and more of each other as the days slipped by and as day by day the long jetty grew out of the sea's bosom, a silent, stationary monster of masonry and steel, a monster which wind and wave buffeted, but which never would give way.

The deluge of ice had stopped, it had found its battle-line, dug-in, as the soldier has it, and though it could advance no farther it would never relinquish an inch. All over the world on the three big oceans, north and south, the nations were bending their backs over gigantic sea walls of metal and stone set on the briny's oozy bottom to send pole-ward the warm currents of-

water to meet the ice. Fang and claw, the world was fighting the ice and fighting hard.

On the opposite side of the globe, the Japs and the Chinese were bending under the burden of a series of jetties that were to send the warmer water of the Equatorial Pacific scurrying into the regions of ice and snow.

In the Bay of Biscay, Europeans labored like madmen to swerve the warm current farther toward the north.

On the coast of Florida, not far from Jacksonville, a small jetty pushed inland the northbound waters of the wide Gulf Stream, that blue river in the green of the ocean.

Jetties everywhere rose out of the depths of the sea as if by magic. Today the waves fell in unbroken, in huge crests, capped with white and in deep hollow troughs, over an even sea, to-morrow a long, level line of steel towers were to lift their skeleton heads skyward out of it, taller than the tallest of its waves. A while later came a wall, a huge edifice of concrete, for an Aladdin's lamp had been rubbed and a world was working overtime.

Nine months earlier the first diving bell descended with its crew and sent word back that they had touched the bottom of the sea, and the concrete foundation of the first pillar of steel was laid then, four hundred and eighty feet below the lowest valley of the waves. The current was turning, and the warmer waters were flowing north to meet the ice and end the glacier's marauding career.

IT was one-half a year since the wall had been completed, the first of the lot, and already the big icebergs were tearing themselves away from the main body and drifting southwards with the cold current that came from the Arctic Circle under the surface of the ocean. In reality the Gulf Stream is a trio of warm water streams, about one hundred and seventy-five miles wide with about fifty miles of cold water ribbons between the three warm streams. But now, thanks to the electric superheaters that received their power via wireless from the huge dynamos at Victoria Falls and the manufactured hot carbon-dioxide that warmed the air above them, they became one wide stream of heated water, and flowed with a daily speed of five miles along the American Atlantic coast and then off toward the northeast. And as the glacier melted and receded, smaller jetties, some of them mere anchored sea walls, were swiftly erected at various advantageous points and each jetty comprised a series of huge heating coils that kept warm the southern waters and here and there artificially generated winds kept them going on.

About forty miles of cold water separated the Gulf Stream from the American coast and this "Cold Wall" was pushed rudely aside by a number of smaller sea walls anchored to the ocean's floor. This brought the warmer waters so much nearer to the shore. Later, as the ice gradually melted and as it lessened along our coast, more and more of these "push-over" jetties were put up, until just off Sandy Hook coast where the great warm water stream-current turns northeast and

toward the coast of the European nations, a huger jetty was built to prevent the cold, under water flow of the Arctic Current from undoing the work of the warm Gulf Stream. Then, after the glacier had been conquered, and the resulting floods allowed it, man vanquished the ice still left on the high hinterlands. Then man could start to rebuild his lost civilization on a land bereft of everything.

So, day by day the huge ice wall retreated and, as it did so, it sent down from its torn breast huge mountains of ice, multi peaked, brilliant cathedrals, resplendent in the sun, tall, silent sentinels upholding the azure of the sky, the relics and fading monuments of our former destroyer and conqueror.

One morning I arose early and pecked out of the window, where Aurora, on the rippling horizon of the east, had already made pink the skyline that had been as ebony all through the night, and merging sea and sky into one, had built a shimmering pathway of silver on the crest of the waves. A year had elapsed since the first jetty had faithfully answered the hopes and prayers of a waiting world. Now three hundred jetties, big and small, lifted huge concrete backs out of the deep. It was only last night that a swift French destroyer had landed me on the newest one of these, on the Jersey coast, and only a league away from the high ice wall where the pæan of victory was sung by the warm current as the death-knell of the Sixth Glacier rang through the air. A hundred fathoms deep the warm Gulf Stream was flowing and nearly two hundred miles wide, and it proved a terrible and unrelenting Nemesis to the ice that had held us for so long and weary a time.

From Hawaii, now the main center of Japan, news came that a certain army chemist named Bendo had invented a microscopic heat element which, when put into the sea, transformed the current as it traveled with it into an inter-oceanic river of steam. Thin wires of silver in sets of twos were let down to the depth of about five hundred feet and on the end of each was suspended a perforated metal plate, thick with a gluey solution, which in time threw off the hot electronic particles, which flowed in a steady stream with the current and keeping their heat for many miles, made a seething cauldron out of the current-streams of the deep.

It was this that had from the very beginning proved so dire a foe to the ice kings from the poles. I watched them often as they sent the superheated Gulf Stream, seething and foaming, deep into the heart of the ice fields and spreading an invisible blanket of warmth over the land for five hundred miles inwards from the coast.

Electric heaters, we quite properly named them and we found them to be very effective also in combating the ice-infested rivers, which flowed toward the poles. As they melted the mile thickness of ice that lay over the streams and sent floods everywhere, they left a bright chasm a mile deep and many miles wide, as the newest river bed, with tall walls of ice rising on either side.

CHAPTER XII

An So At Last the Ice Gave Way

AND then came the floods. Oceans of water were let loose. The unfortunate ones near rivers and shores were trapped like rats in a swollen sewer. Higher and higher rose the seas, wherever bays were narrow or coasts were low; at times they even covered the tops of jetties. And as they went southwards, they inundated many beaches and often left behind them huge hills of ice.

And not only did those lands which were nearest to the melting wall of ice feel the damage of the flood; those which bordered the swollen rivers also were affected. Beaten and kicking its last, the Sixth Glacier struck out at those whom it failed to get before.

Italy was using volcanic heat, and huge jets or streams of hot water were uncovering lost lands on that boot-shaped peninsula. A one-time fortunate eruption of Vesuvius threw up large quantities of hot gases and cut a large patch out of the ice-field that covered Naples. The Mediterranean sea was still one huge cake of ice for the warmth of the current could not pass the strait of Gibraltar.

HAPPY was the world of fugitives who lived in the horrid zone, gradually coming into its own again. Slowly the big walls of ice retreated northward and southward, here a jagged piece fell into the sea, there an overhanging mass dropped with a monstrous splash and was carried toward the equator on the crest of the waves. And then one day, when the warm air and water spread and cut grooves into the ice-range, entire miles fell into the sea as if by the stroke of a magician's wand. Newer cities were daily planned and newer lands were divided among those who had lost everything when the ice came from the poles. Even now, braving the terrors of the coastal floods, families were dropping into the relinquished lands, slowly to be sure, but pioneers would never be pioneers if they came in hordes or in vast multitudes.

Famished nomads roamed the bleak interiors of the ice-fields where cities and towns once had stood, and where millions once upon a time had lived, toiled, played, loved and died. There these desperate creatures, from whom hunger and cold had taken the final vestiges of civilization, eked out a cruel existence by hunting, trapping, fishing, and robbing one another, and whenever these methods failed, a ghastly cannibalism took their place. Of course, many of these people eventually found themselves in some outlying igloo village set on the fringe of the halted glacier where the first of the pioneers were awaiting the bugle-call to advance. Others however merely wandered to and fro on the crest of the glacier or finding a temporary nook safe from wind and hunger, erected homes of snow.

The broad prairies of the Argentine, the Chilean, Mexican, and North African desert sand-wastes, the Veldt of South Africa's spared regions, the mountainous countries of the Andes, Cordilleras, Sierra Madre, with the fertile vales, and the swampy regions of the

tropical lowlands, together with the South Seas and parts of Asia, were the havens of refuge of ten millions. The peoples of every tongue and clime started life anew there, on almost nothing, and fought as only the desperate can fight for their existence.

And then one day the sun came out. Reports from several newer astronomical observatories (reconstructed from the salvaged material of the older ones) had it that safety and rescue were in view and that the outer fringes of the vast interspatial belt of cold was not far off. And so at last the ice gave way.

FOUR weeks went by and with them went the end of the frigid belt. Hundreds of gigantic icebergs menaced the ships that were already carrying northward those, who had only three years ago fled in panic before the ice, and also the tiny newcomers who had never experienced the ordeal of those dreadful days.

And as the ice melted, the floods came and a second deluge threatened the world, its menace as terrible as that of the icy flood that had preceded it. Rivers became roaring cataracts that defied everything. And with the torrents came huge cakes of ice that jammed at narrows and formed silvery dikes. The mad waters flooded the countryside for miles around. Airplane bombs blew these ice walls into glittering, oriental smithereens, that became rainbows, as the powerful explosive hurled them high into the air. Then side-tracked waters receded back into their original tormented beds. The land was full of lakelets, wherever there was hollow ground.

The Mississippi, torn from its pre-glacial channels by three years of moving ice, proved to be a terrible Father of Waters. New Orleans became a ghastly death-trap to almost three million people early in the season of the big thaw. One night the inhabitants were told that there was no danger and then, as the town clocks chimed out the death knell of another day, that most dreadful of cries wrung the sleepers ears: "Awake, awake. The waters are rising." The sun of the next morning looked sadly down upon a demolished city and its three million dead, one vast graveyard that fifty feet of flood water claimed as its own.

Wide, shallow torrents crisscrossed the deserts of the southwest for the sands offered but the poorest of river beds. Los Angeles was flooded and San Pedro, twenty miles away and by the sea, was just swept away. Sacramento became a veritable Venice as the river, that coursed by it, rose. The remnants of San Francisco, which the glacier had spared were all swept away into the sea. The Colorado River became one huge lake covering four states, and where the deep gorge of the Grand Canyon impeded its way, it became a raging, tearing fury of brown, foamed with milky white, a demon of water. The Rio Grande too, became a lake and on its bottom was El Paso with only the hills of Fort Bliss above the muddy water.

From where Seattle once stood, southeastward on a more or less irregular line, to the place where Salt Lake City once was, thence on a straight course to the north rim of the Grand Canyon, eastward from there in a snaky line to the snow-capped Rockies, skirting

their sides only to orient itself toward the Great Lakes and thence out to the Atlantic, was the newest line of battle of the Sixth Glacier.

Europe and Asia was still covered north of the Alps and the Balkans, over the Black Sea where it formed a low, irregular wall, and thence defied the sun on the north side of the Himalayas. Australia and Africa were entirely free, though Capetown, Sydney and Melbourne were no more. Tierra del Fuego was still in the glacier's grip.

Somewhere a bit north of Denver, a city one mile above the level of the sea and framed by many mountain peaks, was to be our new national capital, and though yet fast in the glacier's grasp, the plans were made and the men were ready.

New river courses found homes in the late desert lands, and the fertile soil, washed down from hill and stolen from Arctic vale, sent us sagebrush and manzanita, threefold as much as of yore. On the banks of rivers, tules and arrow-weeds sprang up as if by magic, and all indications pointed toward verdant fields, where once only scrub-brush grew.

A score of cities with their outlying farm districts grew like mushrooms overnight, not huge cities of towers and minarets, but long, straight avenues that stretched across the flat lands or ran up and down the hills, treeless and barren, homes of canvas, of mud and of stone. Lands were tilled and crops sown and people lived anew on the northland's finest of soils, brought down by the glacier as the war indemnity of a conquered foe.

Came Thanksgiving Day, the last Thursday in November of that happy year and the whole world made it a day of joy. Although but one day was proclaimed, that day grew into one whole week.

It was at about this time that the Pan-American Federation of Nations broke up, broke up in bad blood with one group demanding millions as rental debts, and another group, just as impoverished, moving out and refusing to pay. War for a while seemed imminent, but as there were no spoils for the victors, the newest of war-clouds drifted away amidst grumbling and curses. In such catastrophes, the lands of the earth are the possessions of no particular ones, but of all who seek shelter there.

Greece was the first of Europe to be freed. Italy came next, then Spain and France, together with the lower Balkans. Turkey had never been in the real grip of the glacier, and though it had suffered many boreal days and months, the land of the crescent and the scimitar never felt the icy grip from the pole that its neighbors had. Persia was first cleared in Asia, and, in our own country, Maryland was the first state to free itself of the Sixth Glacier.

THEN one day war broke out in Brazil. A group of huge national "ghettoes" had sprung up automatically with the influx of North Americans and Europeans. Lands were cleared and farms and houses were erected. Hamlets became towns and sometimes cities, too much of hard labor's offsprings to expect men to give up without a struggle. And yet the new, fate-

driven settlers not only refused to become citizens of the settled lands, they refused to leave even when the glacier retreated from their erstwhile homes. In fact they became distant colonists of a barren motherland. Days of bloodshed followed, skirmishes, massacres, battles, while carcasses rotting beneath the tropical sky fed the birds of the air, and smouldering ash heaps held reign, where only a while ago towns had been. Finally disease became the grand conqueror and germs proved more terrible weapons than bayonets and bullets, and a train of sick and weary armies marched home, unhalted and unsung.

Of course many died in this grand exodus from a refugee's home, but also many a one was born on that northward march. It was not like the mad stampede of three years ago, when a panic-stricken multitude trampled the weak and left the sick behind. The returning armies came in more orderly fashion. Group by group, with tearful parting which smiles belied, as one throng received its orders to start, singing poems of victory, they marched home, defying the floods.

CHAPTER XIII

The People of the Glacier

ONE day while at the new settlement of Dunravenia, on the scarlet south rim of the Grand Canyon, the flap of my little tent was thrown rudely to one side, and Clara ushered herself in with a whirl of snow. Close behind her, and grinning like a huge Cheshire cat, was the big boyish Major Cummins, U. S. A. Little was said on any side. Clara was in a hurry to go to the aid of some storm-stricken igloo villages in northern Utah,—the big major knew of nothing to say; as for me—my heart was too full for me to give vent to my thoughts, so we bowed to one another and bid good-byes, promising to meet again on some summer day. Clara left a letter behind her and even before I cut the flap of the envelope, I recognized the almost effeminate hand of the portly amateur of science, whose timely warning had saved so many lives. Clara gave my hand a petulant squeeze, which I wished could linger on, and she promised to call again as soon as her Red Cross duties would allow. Paul, she told me, had only recently arrived, and then she lost herself in the narrow confines of a rather diminutive aero-sedan, and even as she locked the door behind her, my quick eyes caught the sight of a glittering diamond on her left hand, which, I knew well, had not been there for very long. "Paul," I said to myself, half aloud, "you've won. Congratulations old man and happy days. But how in the world did you do it?" The age-old lament of the beaten lover. Then a moment later I reflected: "What is she gallivanting around with the old major for?" I asked myself, and echo answered, feebly though, "Oh, yes; he, too, is going north to succor the hungry and frozen ice-dwellers. He's an army man." However, I slept poorly that night.

Paul came to see me at noon the next day, a woe-begone Paul, downcast and haggard. To my half-hearted congratulations, he turned an askance mien. "Bosh," was his momentary expression and a sickly

smile crossed his face. Then he continued in a chilling "What-do-I-care" tone of voice. Not me, old boy," he said slowly, "I'm in the same boat with you. Congratulate the right one." Though gone was my love, I slept a trifle sounder that night. Misery does love company.

For two days, Dunraven's missive had gone unread. My mind was too full for scientific gossip. Strangely, the tie which, a short while ago had held me so firmly to the elder man, was now somehow no more. His scientific rantings appeared no longer to hold an interest for me, and I found my idol to be of clay. "Bah," I ejaculated peevishly as I sat partly dressed on the edge of my cot. "What do I care about him and his?"

However, I read the letter, though hastily. Dunraven predicted a world of involuntary vegetarians, and later years proved this to be too true. The spider people of his discovery had made use of poisoned arrows, some of the arrow-points having been found. The aged German savant had broken his foot, while attempting to carry a part of a very ancient cannon out of a very deep excavation. A handle-less stone battle-ax, more likely than not of an eolithic era, was also unearched by the sleepless bloodhounds of science, reminiscent of the by-gone glories of the ape-man's days; it told how he fought the spider race which conquered and enslaved him with poisoned dart and iron shot. "That these so very interesting creatures were fairly on their way to hid toward a kind of humanity is more or less ascertained by the noticeable absence of any silk-sacs on the pictures of themselves which they had left behind them before relentless time claimed them, their last pictures that are growing in number with each stroke of the pick," the letter went on to say in part. Then followed a very natural lament against the lack of any scientific spirit in the new Mexican government which was even now casting an evil eye on the little Yankee city that had risen around the ruins. The letter ended up with a long tirade on the speculation of the government and the social system of the spiders, about their mode of home life, and whether they laid eggs or belonged to some extinct order of ethnological mammalia. Of Clara, nothing.

I sighed a very audible "aw," and threw the letter into a corner of the tent. The following day I made ready for a trip to Tampa.

Those rivers which flowed toward the pole were harnessed by the returning home-seekers to carry into the heart of the frozen lands the great electrical heat waves that melted the ice, and as these worked only in salt water, an almost endless procession of salt trains came from all directions of the compass on the newly constructed narrow-gauge railways or by huge trucks over the roads.

So rapid is the healthy recovery of Nature, that in no more than one year's time, the tropics became the tropics again and though palm and banyan did not flourish until later, the natives were already beginning to forget those cold days which carried them off, and thick undergrowth came up almost overnight. Hearth and home of noisy insect life were resumed and there

were huge ferns, such as paleobotanical treatises allow to the Carbonaceous Era, in the days when most of our coal was made. They were as tall as trees and as little as tules. And as the ice-driven white settlers returned to their nothern homes, they left behind to the dark-hued, thick-lipped natives tilled acres and hastily built villages, relics of civilization, as payment for the three years of safety there. Just another chapter in the unwritten annals of civilization, mankind's slow conquest of Nature in her fiercest of moods—mute, ceaseless struggles. All unrecorded.

Brown, gray, and mauve hills, their broad backs once covered with forests, now carried tiny left-over glaciers, and their fertile valleys, opulent with three years of accumulation of northern soil, were covered with many feet of snow. For a long time the lowlands were soggy, while the river valleys were constantly at the mercy of newer and newer floods. Where gigantic cities once upon a time had stood, now to be located only by latitude and longitude, there were but flat terrains or low, rolling lands, arid, lifeless, barren—mute witnesses to show where the polar ice had crushed all as it passed in its might. Yet if one dug in places deep enough, some bit of iron or stone would appear as a reward, a relic out of more orderly times, which the glacier had failed to carry off.

There was no wood, for the reclaimed world was treeless, and families had to start life all over again in houses of mud and stone or in tents of canvas. Long, straight avenues, bordered on each side by wind-flapped tents or by sturdy adobe walls, overlooked naked plains or hilly countries that rose and fell away toward the horizon. Surrounding them were patches of green that seemed to bow before each breeze, where the first buds of the newly sown gifts of the soil had only a few days ago left their dark underground homes to take their first peep at the blue of the sky.

THOSE people who had braved the ice, and defying boreal days, had played Eskimo on the glacier's back, were glad to see the end of their game, and their igloo homes destroyed by the sun as the ice gave way. Like savages they either roamed the unbounded ice-fields or hid in the precarious safety of their little snow-houses, emerging only when hunger became the incentive. There on the glacier's back they formed the desperate, vandal bands, that knew no law but that of self-preservation or became the quieter igloo-villagers who hunted the polar bear and the Arctic fox in order to exist.

Four years had already gone by since the first panic-stricken refugee started for the south, and by this time the ice had already receded until only the lands north of the Canadian border were still in the glacier's grasp. There were still irregular patches of ice here and there, long arms of the mightiest of glaciers that projected forth into the higher regions of the continent as if the polar foe were reluctant to give back to man the land that was his own. In the mountainous districts of Colorado, Idaho, Wyoming, and Montana, the Sixth Glacier still stretched long icy arms and there remnants of the polar demon still remained to tell of those terrible

days when pandemonium broke loose and reigned over the world. North of that all was still the glacier's own.

A squadron consisting of seven motor-sleds and their huge lorries, all of them overloaded with provisions, went to succor a group of survivors who for four years had eked out a slim livelihood in the high, mountain regions of the Yellowstone. In the vicinity of the Teton Basin, this government train was overtaken and looted by a gypsy band of famished snow-dwellers, men and women, whom four years of hardship and deprivations had returned to the cave ages. Upon report of this newest outrage, one of the many of its kind, the government immediately dispatched a small fleet of fast, heavily armed motor-sleds, accompanied by an esca-drille of flying machinery, to break up the boreal band-ity that, like the attacks of the redskins of old, came down in silence and stealth on the northernmost outpost settlements. Even at his best, man is but a short three-hundred generations removed from the caves and a hirsute, large-tusked forbear's ghost is with us yet, and an empty stomach understands no rules and regulations.

There was a battle during a snow-storm, the strangest battle in history. Huge balls of snow, that became huger with each turn, came down from the hill-tops and buried part of our train in an avalanche. Machine guns, tear-bombs, rifles, grenades, and aerial missiles, however, soon routed the looters from their snowy fastnesses. Like covered beasts, they fought the fur-clad soldiers in ravines, on slippery mountain-tops, and the prisoners that the soldiers could take were few. As a representative of a journal which was the first to decry the coming terror, I was allowed to interview them—emaciated men and women of another eon—and in scattered phrases learned the story of four years of terrible life on the glacier's back.

They were landed a day later in a temporary camp, still a bit scared and wild. Busy with my camera, I failed to notice the arrival of half a dozen Red Cross sleds and they left before I was able to see Clara, who was among the Red Cross workers.

A day passed, a day spent in motor-sledding back to the site of the proposed new national capital, Washington. I directed my footsteps to the gigantic wood and corrugated-tin edifice which housed the multitude of wards of the emergency hospital. A pompous, middle-aged chief orderly with the imperturbable air of a floor-walker, let me know in a brief sentence, that neither Clara nor the contingent of Red Cross sleds to which she belonged, had as yet arrived. Then leaving me rooted to the bare wooden floor of the building, he returned and strode majestically down the long corridor, his heavy footsteps echoing throughout the spacious place. Later one of the night nurses let me know that although they were expecting the arrival of the other Red Cross sleds at any moment, not a few fears were felt for the safety of the few men and women who made up the personnel of the train of sleds. A wireless message from the military sled outfit with which I had been and which even now was scouring the snow covered hills and valleys for any sign of the predatory rovers on the glacier's back, had given warning to all of the outlying newly formed settlements to be on their

guard, as hostile bands of crazed, hunger-stricken men and women, those whom four long years of deprivation after deprivation had hurled back into the antediluvian eons and the days of the caves, were outraging the countryside with looting and murder. That night I slept little.

EARLY the next morning, the rising sun still below the crimson of the eastern skyline, Major Cummins, only partly dressed and very unmilitary-like in his four days' growth of bristling beard, broke wildly into my tent and between pantings of breath, and accompanied by maniacal gesticulations, each of which threatened my clothing, strung out on a line between the tent-poles, told me in excited words, that Clara had been kidnapped by a horde of hungry igloo-villagers who considered themselves neglected by the food distributing committees. She was now being held for ransom to appease gnawing stomachs. Their terms were arbitrary and the alternative too gruesome to relate. Fifteen minutes later we were speeding northward as fast as a propeller-driven motor-sled could take us. At noon we were searching the remains of what once had been a Red Cross train of sleds. Night found us in the lower regions of the mountainous Teton Basin, south of Yellowstone National Park, still well within the chilly grasp of the Sixth Glacier. Only the snow-laden tops of the many tall peaks protruded above the world of ice, which seemed to encompass all, as far as the eye was able to see. The next morning we were prisoners in the hands of the starved villagers, who had seen us arrive and had awaited only darkness and the night to pounce upon us.

That an unappeased hunger had brought cannibalism upon these unfortunate people, the many human bones scattered about their snow dwellings told only too well. I pointed this out to the army man, who immediately turned pale beneath his stubby growth of beard. "We must make terms with them—any terms they like," was all that he could find to say. And then a couple of minutes later, "My God. My God!" I turned my head and looked at him. His huge head was lost in his pair of huge fur-gloved hands. "Cannibals," he was saying to himself, as if there were no one close enough to hear, "and we've only been married eleven days." A moment later he turned to me, anxiety in both of his wide-opened eyes. "But they're after good food just now and not human flesh. Isn't it so, Bender? They'll never eat her. No, never. She's only a hostage to make sure that we bring the grub. We'll treat them right by all means and promise to send up the chow-wagons right away and they'll surely let her go. Don't you think so? Sure." My answer was almost an inarticulate "Uh, huh," nearly a grunt, for my chin had fallen and I felt like a beaten dog. Relegated to the lowest limboes was my final shred of hope, and just like any other beaten, love-sick swain, I was a silent, morose man. "The army had won again," was the sole half-audible remark I made after a half-hour of wicked thoughts, before I coiled up on my wolf-skin bed on the snow. A moment later I was in a dreamless slumber.

Next day at noon, inside of his igloo, we stood face

to face with the chieftain of the hungry tribe, a very big and hirsute man, wrapped in furs. It was not difficult to surmise that sheer strength and brutality had given him a footing on the clan's loftiest pedestal and had kept him there and even now allowed him to hold unqualified sway. Four young, thin faced women hovered sycophantly about him, a quartette of fur-clad butterflies. Three be-whiskered men, armed with rifles, stood menacingly behind us. The hungry clan leader eyed me as the famished wolf would eye the well-fed dog. Then for a brief instant his eyes rested on the Major's fur coat. "An army man, eh," he commented with a leer that exposed a very irregular row of teeth. "Well, old boy, we'll army you here, all right."

For our words of succor and food from the government, the burly men had complete contempt. The fact of the general helplessness in the face of the glacier and the vast magnitude of the ice-fields, never seemed to have entered his mind. He talked as a peevish child might talk, who had thought himself unjustly wronged. He never appeared to grasp the world-wide-ness of the situation and answered only in an egocentric way.

"If the government is so bent upon feeding us, then why didn't it feed us all along. We were here for four years, hungry all the time. One by one we starved and died, and then, because there was absolutely nothing else to eat, we ate the dead. Mere skin and bones they were, but we ate them. My wife and my four kiddies died the first year, one after the other, but what was that to the big ones safe in the White House down in Washington? They had plenty to eat, I'm sure. You talk about the Red Cross. Well, no Red Cross came here in four long years. They just allowed us to go hungry. And then you wonder why we steal. Anybody will steal when he's hungry."

My arguments and explanations, or rather my hasty and puny efforts at such, were futile, for the man was unable to grasp the vastness of the catastrophe and the world's helplessness before it. It never entered his mind that the very government which he thought had neglected him so direfully, had been non-existent during all of the four years during which he went hungry. I endeavored to show him the wrong impressions that he labored under, but as every word of mine tended to enrage him, I realized the value of the ancient adage that silence is golden.

WHEN we returned to our fur-floored prison of snow, the major became voluble again. He feared the teeth of these cannibal snow-dwellers for his young bride; he feared the harem of the burly leader more. I allowed him to talk on for about an hour or so when in the steady outpour of his Niagara of words he made his one rational, although unconscious, remark:

"I really do believe, Bender," he said, "that—that big fellow believes us to be on the square. He really thinks he'll be fed and that we mean rescue, but then there's really something else in the wind back there. Once upon a time, you know, he had nothing, probably he was only a day laborer or a farmer. He's big enough, now, however. He's king. A real honest-to-goodness King and

his word is law. He doesn't appear to be so starved to me. Did you notice how they all jumped whenever he spoke to them? I did. A return to civilized ways once more would mean to him, the return of a King to the farm and the plow, or to the forge. You know what Caesar answered the Roman Senate when they wanted him to come back to Rome and be second in command: "It's better to play first fiddle in Iberia than second fiddle in bigger Rome." This man seems to think so, too. A life of comparative ease now. Anything obtainable at his command. I'm sure that he never went hungry. And did you see his wives? I wonder if he intends to include Clara in his harem?"

In answer, I smiled an almost demoniacal smile. A blighted lover, even at his best, is but a poor companion; and he is of very much less value when the victor is at his side.

We received no food. I recalled the human bones which I had seen scattered about the camp and my hunger was appeased. The major, however felt otherwise. He cursed them volubly and in no uncertain terms and told me many stories of savages who fed their captives.

"Maybe they wanted to fatten them," I answered grimly, but he merely contemplated me with a peculiar glance and made no remark in return.

Late that evening, we heard a scattered series of shots coming from the direction of the village, shots that the mountains roared back at the sky. Five minutes passed riotously, then the tumult and shouting died away. A minute later our three armed guards fired twice apiece and then were lost beneath a pile of waving arms and legs. A couple of fur-clad bodies hugging closely the snow that was even then swiftly becoming dyed a gruesome scarlet, showed where two of the guardsmen's bullets had hit their mark. Shouts of "home again" and of "let's go back" reached our ears from the main part of the igloo settlement. A sudden revolt, pent up by many cruel days, had burst forth, and the big, fur-clad King was dead, his Kingdom gone and his adhering sycophants scattered to the winds. Too many lean days had driven these men and women, who had known better times, to desperation and a desire to return to the civilized life that was awaiting them. There was no King to stand in their way now.

Little use it was to give them any assurance of safety. These people had known terrible times. Most of them even doubted that the fight was finally won, that the glacier was even now retreating. "It's still snowing, is it not?" they would say and regard us with the disdain with which one regards a prevaricator. "Even if the glacier has stopped due to your jetties, it stopped only in the tropics and on the shore-lands. Here we are too far from the coast and too high up in the air for warm sea currents to do us any good. And then too, these winters are so long, so very long—and so very cold. Panama is too far a distance for us, half-starved as we are, to travel over a world of ice. Locked in by these few salvaged mountain peaks, we are to some extent safe, even if we are hungry and we do not care to risk the furies of the Arctic gales on the lower plain lands below. If the heads of this new

government that you talk about really do want to help us and are our friends, then why do they not send us food and fuel instead of armored sleds and soldiers with guns? Isn't Nature cruel enough with her ice and storms?

"However, if you two are sincere and are really speaking the truth, then go home, let them know how we stand here and return with pardons and with food. We'll find some way out after that. But no soldiers, for remember this" (and here a score of hard, sunken eyes gleamed upon the major) "we've got the girl. She is our hostage and the ransom is food."

A newcomer entered the group, a cadaverous youth, hollow-eyed and prematurely aged. In his hands he carried some bits of broiled meat, almost black from too much open fire. He handed it to me, reluctantly, as if giving up part of himself.

"For your trip," he said. "They'll give you some guns too. Don't be afraid to eat it, buddy. It ain't human flesh. It's coyotes' paws. Kind o' burned, but still better'n nothin' at all. An' say, hurry back with some real grub, will you?"

"Well, here's one at least that has a bit of faith in us," I told the silent major. My judgment, however, was short-lived, for scarcely had we gone a hundred steps when the thin youth shouted after us. "Hey, you guys," came his high pitched nasal tone, and there was not a little malice coupled with it. "Better bring the grub, else we'll eat that girl." The major's legs became springs that instant. "Let's hurry," he said, "and bring them something to eat. The poor devils are starving."

We found our motor-sled almost intact where the hungry igloo-dwellers had left it on the night of their stealthy attack. Only the wooden parts of it were gone, for the nights were very cold here and fuel was at a premium. I started the motor and it purred hopefully.

Then followed a quarter hour or so of silence. The military man was drumming on the glass of the useless and shaky door, which rattled with each vibration of the speeding sled. Once we passed a sample of heavily fur-clad men on long and awkward snow-shoes with rifles in their mittened hands. They walked laboriously, as if the journey had been long and tedious and the snow had been deep. One had a dead fox slung over his shoulder.

We were now entering a slope made hazardous to such travel by a series of very sharp curves. Huge pillars of ice jutting out of the snow made speed impossible. I had just put all of my weight on the foot-brake mechanism which released a heavy spiked beam into the soft snow under the running sled and at the same instant stopped the huge propeller which pulled the sled forward and had shouted to my companion to take hold of the emergency brake lever at his side, when I felt the icy floor beneath us giving way. At the same time I was aware of a crash that sounded like a million ice-picks at work at once. Down we slid on the tumultuous crest of an avalanche, men, machine, ice, snow, rocks, for about a quarter of a mile away from the mountain-top home of the igloo-people that

loomed like an island out of the shining flat back of the glacier. A moment passed and we were pushing our way fiercely and ponderously through a huge snow-bank. Then everything came to a sudden standstill. We emerged scared, shaken, but uninjured. The wrecked auto-sled lay, a mass of twisted iron of the hill. A long, straight trail, cut in the snow above us, showed the route we had come.

"It's all over now, I guess," I remarked as I contemplated the hopeless wreck. "And it looks like snow. Much snow." The sky was like lead.

"Night will be upon us soon too." Thus from the major.

"Oh well, it always is—sooner or later."

"It's four now by my wrist-watch. Is there no way out? No way to fix 'er?"

I shook my head slowly.

"About how far are we from the nearest settlement?"

"Four hundred miles at a very conservative estimate."

"Four hundred miles—gee! We might try going back. Why not?"

For answer I pointed to the almost perpendicular wall above us.

"Uh. Oh, yes. Guess we can't, at that. No chance for climbing. Isn't there some way to repair the machine, though. We have tools."

"We have them scattered over about a quarter mile of snow. Yes."

"Gosh, but you seem to take it easy. There's lives depending on us, man."

"Well, what do you suggest?"

"Uh. Can't fix 'er, that's certain. Let's see."

He was gone for a few minutes and I could hear him tinkering with the wreck.

"No use," he said upon returning, fur and face marked with black grease spots. "The motor fell out. I got the guns, though. We very likely will need them. Huh—what was that?"

"Sounded like wolves to me."

"Wolves."

"Yes, I guess so. Wolves or coyotes. Better let me have one of those rifles."

A LITTLE while later we were inspecting the wreckage together. Repair was absolutely beyond possibility. In the rapid flight to the base of the hill, the entire fore part of the sled had broken loose and was now buried in deep snow somewhere between the base and the summit. The top and one of the sides were crushed in. The radiator was gone, as was the battery. One of the light aluminum-steel runners was twisted into a spiral as if done by a Cyclopean hand and the light rapid-firer was torn from its tripod. We were lucky men to have escaped alive.

"No, it's no use; absolutely no use," I told the major. "We'll have to stay until something turns up. That is, unless you care to try four-hundred miles of snow, or this hill above us. I don't know which would be worse."

Once more the series of long drawn-out howls arose and pierced the air. This time they seemed nearer.

"The wolves are calling to each other," I said, finger-

ing my rifle nervously. "They have sighted us. Keep close to your gun, Cummins. Let's try to fix that rapid-firer. It may come in handy. Better have some gasoline and matches near at hand. The tank's intact, I hope. Have you a flashlight?"

Night came upon us suddenly and brought with it the wind and snow. It fell in streaks, about as fast as snow could fall. It never fluttered, it fell down in chunks and small masses and covered everything in a few seconds' time with a blanket of smooth whiteness. At intervals of a few minutes, the vandal beasts of the ice-fields mad with appetite, continued their weird, ominous calls.

It must have been somewhat past midnight, before the wolf-pack howled itself into enough courage to attack. The grim, gnawing pangs of hunger make even the most cowardly brave, the most discreet reckless, the most lamb-like fierce. The snowfall had abated to some extent, but the thick flakes were still coming down and covering our wrecked sled, amidst the twisted tin and iron, where we had taken refuge from both beast and element. We had decided upon the plan of each taking four hour shifts on guard duty, while the other slept. I was allowed the first shift at sleep, huddled up among a pair of heavy blankets, which the people of the glacier had returned to us, and my own huge fur coat. It seemed only a minute after I had fallen asleep that the major awoke me. In the flare of the burning gasoline, I could see that his eyes were weary, like those of a man who had only now left behind him a long, hard illness. He pointed to a couple of Springfields near at hand.

"They sound nearer every minute," he let me know in a low, sepulchral tone. "Once I was even able to see the gleam of eyes, a score of twinkling, green pin-points. Dark as all hell outside; and I'm sleepy. Keep pouring gas into that tin-plate or the fire will go out and they'll attack. No snow's falling in. I fixed our roof, and fearing that the weight would crush it in, I kept the snow brushed off. It's four o'clock now and not so very far away from dawn, so let's hope for the best. There's some cigarettes on the seat next to you. Better light up. A fog is a good companion on a lonely watch. I can testify to that. Good night."

The night was cold and the wind blew hard and wafted to my ears the long drawn-out, eerie yelp of the predatory beasts, made mad by hunger's unrelenting lash. I found the major's cigarettes and took his advice. Then, with nothing better to do, I fingered the magazine of one of the rifles and made the other ready for combat at a moment's notice. The snow kept falling steadily but as the wind came from an opposite direction, it did not bother me. I was safe behind the shelter of the wrecked auto-sled. At times, however, the strong blast from off the plains threatened to push sled and all over on its side and I began to have apprehensions for our little stronghold. Also, under the weight of the accumulated snow, the weak roof was beginning to give way, protesting as it did so with cracks and groans. So with rifle in one hand and flashlight in the other, I crawled through the battered door of the sled and out into the wind and snow.

I felt as the storm-struck mariner must feel, when he is aroused from his slumbers by the call of the mate at midnight, or when amidst the wild diapason of wave, wind, and human throat, he hears the most dreaded yell of those who dare the seven seas, "All hands on deck to man the life-boats." I lowered my head like an angry bull as I bucked the gale-driven snowflakes. In the near distance the wolves howled and I could see the reflection of my tiny gasoline fire in a hundred green eyes. I fired a wanton shot and for a few minutes there was a silence. Then I heard the major's excited voice.

"What is it, Bender? Ho, Bender, where are you?" His words ended in a scream and amid the crack of his gun, I could hear the scraping of paws and the sounds of struggle within the sled. I arrived as the light went out, a wolf yelped a cry of pain, and Major Cummins' gun barked out again, a stentorian, staccato noise above the howls of the hungry pack. A long, furry body fell heavily at my feet. I turned my flashlight on the major. The man was a born soldier. In a moment I was at his side.

"Light the fire quick, Bender," he snapped out in a naturally commanding voice, sharp and sudden. "My God, man, what was your idea in leaving. That's all they were waiting for. It's a lucky thing for you that you came back alive. Good, she's lit. Keep 'er like that. Our lives depend on that flare just now. Are you sure that we're safe on all four sides? Better get your light and see. We can't take any risks, you know. But I wish it was daylight. Here they come again. Look at their eyes."

Three score green spots, flickering with evil intent, appeared suddenly in the dark about a hundred feet or so from us. The major had automatically taken command, for it was battle and war was his trade. At his advice, I poured more gasoline into our makeshift burner. He fired three times in rapid succession and a bowl of pain rang out in the night. A series of low, hoarse growls contrasted grimly with it as the unfortunate victim of the old soldier's aim was being devoured by his famished fellow hunters.

"We've got to go easy on our ammunition," remarked the major smiling and I began to like him a bit. Now, at his own game, he was very different from the man I knew.

THEN for a long while, it seemed a year, the howling continued. It seemed to harmonize with the voice of the wind. At the price of two broken pocket-knife blades and a cut thumb, I managed to cut some strips of tin. Folding these into a cup-like shape, we filled them with a gasoline, of which the tank happily was still rather full. Thus we had in instant readiness a dozen or more of very crude incendiary bombs in case of a second attack. The major had sallied forth into the darkness and had brought back with him the limp body of the second riddled beast, which fell quite close to the side. It was an Airedale dog, gaunt, shaggy and fierce, with a red hole behind his right ear.

"Wild dogs, not wolves," commented the major in a more or less surprised tone. "Once upon a time

man's best friend and companion, now gone back to the savage stage again; just as these igloo-people have gone back to the days of the caves. It caused men to become cannibals; little wonder then that hunger should drive a dog into a wild animal stage again."

"Yes," I interjected, "it's only a few thousand years since this was their regular life. Let's throw him out to the pack; maybe it'll ease their appetites a bit and make them less eager for us."

It was at this moment that the first wild dog jumped into the opened door and threw me bodily to the floor of the sled. I felt a cold snout at my throat and unloosening my glove, got hold of a handful of coarse, fuzzy hair. An icy paw clawed at my face and I heard a rumbling growl only a few inches away in the ebony of the darkness. I kicked the beast loose after an effort and then as I arose, I heard the major's rifle. I picked up my own and fired twice at the open doorway where a dark shadow appeared to merge into the surrounding shadows. I was rewarded by a yelp of pain and then sharp teeth tore at my fur coat and I fell again. I beat at the head of my canine attacker with the barrel of my rifle and then the heavy body of my companion rolled on top of me, panting, fighting silently. Someone was tearing viciously at my right boot and with the other I placed a heavy kick on a head and as the teeth gave way, I heard a yelp of pain. Somewhere during the turmoil I had picked up a big wrench, the sole survivor of a large set of tools, and with this I beat at the furry assailants on the major's back. A rifle is such an unweildy weapon when the combat is hand to hand. The major fired once more, emitted a horrible oath, and then I heard the pounding of huge fists on cracking ribs. A moment later I was on my feet.

In the flare of our small gasoline burner, ghostly in the whirling snow drift, I saw an eager, waiting pack outside, red tongues licking icy chops. God help us, I thought, if some of these hunger-maddened beasts succeed in dragging us out from behind the comparative safety of our little fort. With that I lit one of our improvised gasoline bombs and hurled it into the midst of the yelping pack of dogs. For a moment they stood their ground nobly—only for a moment. Four years of savage life had completely reverted them into the primitive wolf-pack ages; it made them fear fire; and the pack gave way as if struck by a thousand furies. The major was still struggling and once or twice I heard him curse. The next moment found me at his side. I kicked, I struck, I tore, I fired my rifle and hurled my grenades. The gasoline burner suddenly went out as a huge body fell against it. A dog yelped loudly in agony and jumped through the doorway and disappeared into the night and the snow-drift, his side smouldering with the burning gasoline. I heard the stock of the Major's Springfield fall heavily upon something that cracked sharply beneath it, once, twice and then three times and the next moment we were alone again.

"Quick, Bender," the major was speaking in an even, unperturbed tone. "Light that gas again, or they'll be back upon us. Damn 'em for a thousand furies. I'm

sore and bruised all over. Help me get 'er out of the way."

He was badly bitten and his fur coat was in tatters. Blood streamed from a gash in his right temple and there was another in his right cheek. I rubbed his wounds with snow and bandaged them with a piece torn off my once white undershirt.

The next ten minutes were silent. I saw a maze of sharply flickering green pin-points crawling slowly upon us. Indeed, these beasts, who had been man's born companions for more than fifty centuries and had throughout those centuries learned not to fear his fire and his noise, were coming back again with grim hunger a sure incentive. Foot by foot they came, slowly at first, and then more boldly, and in a minute we were battling for life once more. Reaching for a gasoline bomb, I was dragged outside, flat on my back, on the soft, white snow, newly fallen. I had dropped my rifle in the short mêlée, but luckily still retained my long-bladed pocket knife, the best of weapons for close fighting. I felt the points of strong teeth sing deep into my thighs and shoulders. One big furry fellow growled as he jerked madly at my coat-collar. One time I tore a hairy face loose from my neck and received a severe gash on the back of my hand for my trouble. Three times I felt my knife-blade stick deeply into the soft flesh and I fought that much more terribly, as I heard the accompanying yelps of pain. A dog tore at the heavily booted calf of my left leg and with the other I struck out at him madly and swiftly and arose automatically to my knees. A big dog tore loose my fur cap and his teeth grazed my scalp. A moment later I was aware of a warm trickle covering my face. At the same time my knife sank again and the brute's body fell away from me. Then I was hurled forward into the soft snow, face first, and crouched together at the instant like a battling leopard who is cornered by his foes. I heard Major Cummins shouting when I got to my feet again, took two steps toward the marooned sled, tossing a dog bodily into the air and away from me, felt teeth sink painfully into the fleshy part of my back. Once more I felt the warm ooze of blood; then I was tripped and rolled in the snow again; my head buzzing like a thousand bees. The next moment a huge and ponderous bulk sprawled over me and I heard the major's reassuring voice, soft as a mother's, yet firm as iron, a blade in a velvet sheath. He fired once, kicked a couple of canine enemies from my limp form, and then I became aware of huge arms lifting me into the sally port and the safety of our sled. I heard the heavy slam of the door and the next instant everything became dark, the Stygian ebony void of all consciousness.

"**H**ERE, drink this, Bender," were the first words I heard. "It's molten snow and it's as good as water. I melted it over the gasoline. My God, man, but you are torn up. Lucky for you that you were able to make your way back to the sled as far as you did for I certainly never would have been able to drag you in if you were one foot farther away; and that would have meant the last of both of us. I had to fight the

devil himself, as it is; those brutes were savagely hungry. There is not a solitary body left outside, nothing but a few bits of bones and hair and crimson snow."

I opened my eyes and it was daylight. For a moment I felt dizzy but after a drink from the major's proffered cup, full consciousness began to return. I lay on the furs, swathed in crude bandages and red with my own blood. I looked at my companion, the man to whom I owed my life. His mien was stern; a military mask. His shirt and his O. D. breeches were in scarlet-tinted rags, his head was bandaged, and across his left cheek was a still fresh crimson-colored gash, long and deep, showing only too well what those deadly fangs could do. I extended my hand, and I said, "I'll never, never forget this." His answer was a smile.

I had two long scalp wounds and a number of slighter ones. My neck was badly bruised and some skin was torn from my throat and chest. My left arm was somewhat mangled by the sharp teeth of the canine attackers and both of my legs and my back suffered bites.

Noon came and with it came fever. I talked of Clara, mournfully dolefully, with ire. I cursed the major. I shouted and I cried like a peevish child, shrilly and with force. Thrice, so I learned later, the soldier's strong arms pushed me back upon my crude sick-bed of blankets and furs. Once I tore my makeshift bandages from my wounds and ran, semi-naked, out into the snow. The imps of delirium had me in their terrible grip and it was only when complete exhaustion had overtaken me and brought with it an icy sweat, that I became quiet. Cold snow-packs upon my fever-flamed head relieved me a bit and I shut my eyes and drowsed off into a restless sleep, broken by bits of bothersome dreams. I saw the savage, hunger-crazed dogs again and I cried out to my companion to drive them away. They were big dogs, giants, and each of them had the huge, bewhiskered visage of the selfish ex-King of the igloo clan on the hill-top above us. Then came Clara, clad in furs and with a big rifle scattered the dogs to the four quarters of heaven. But the major picked her up in his big arms and carried her away, leaving me behind to the mercies of the mad canine foe. I shouted curses after him as I watched him go. After that I awoke and asked for water. The major handed a tin to me, and I drank greedily, for I was trying to quench a fire within me. Tottering on the fever-ridden brink of that borderland that lies between sleep and consciousness, I shouted to the major to keep off the dogs. Then once again, I opened my eyes. Everything seemed foggy and in the mist stood Clara, the major, tall and portly in his tatters, old Stephen Dunraven wrapped in many furs, and two khaki-clad men, one of them very tall and thin, the other short and stout. As if from a distance and through the dull roar of a pounding surf, I could hear words spoken. Involuntarily I shut my eyes, rubbed them, and then opened them again. Clara, tall and Junoesque in the olive-drab uniform of a Red Cross ambulance driver, was offering me a drink. Her voice sounded pleasant and I accepted the drink. A white-clad nurse was fixing the bandages on my head

with swift, deft fingers that told of much experience. Dunraven was in conversation with the short, fat man who was busy with my lacerated legs. "Not bad, is it, doctor?" he was asking the stout disciple of Esculapius. The tall man was standing very attentively near by, basin in hand. I felt soft, kindly fingers on my wounds and I was indeed a happy man to know that this was reality and not the mad hallucination of a fevered brain. Succor had arrived at last.

An hour later I was prone upon a soft ambulance cot speeding at a mad pace southward through the air. The bulky ex-magnate and man of science was sitting by my side, the medical man was near him, while the major stood at my head. He was relating in a simple way the story of the fight, ungarnished, statistical. Later in the day I learned that soon after my last delirious attack had weakened me and I had fallen into a moaning and a broken slumber, the ever-vigilant soldier, army man that he was, had espied far overhead, outlined like so many tiny, black specks against the leaden sky, a score of northward bound airplanes. Taking them for the searching party, as they actually turned out to be, he hit upon the happy idea of signaling them with fire. Emptying the residue of the contents of the unlucky sled's gasoline tank on some rocks from which he had scraped the snow, he lit this and now that the snow fall had ceased, it flared up and threw a huge column of black smoke toward the heavens. Fifty feet from it the major stood wildly waving his shredded fur coat. One of the pilots, flying lower than the rest and on the lookout for either roving bands of fur-clad Vandals, hungry igloo-dwellers, or wandering survivors of any of the numerous expeditions that had failed to return, had eyes sharp enough to be able to discern the tiny figure and the huge ostrich feather curl of smoke a mile beneath him. He signalled his companions and the rest is history.

It was in the emergency hospital at Washingtonia that the corpulent amateur of science congratulated me. "Bully—boy, Bender," he said, "the major here says that you fought like a wildcat. Lucky, though, that we came in time."

Major Cummins, however, now that the dog war was over, fell from his natural element and became plebeian and awkward again. With Clara on his arm, unconscious of my very natural chagrin, he stood at the foot of my cot, looming bulky beside his graceful spouse and recalling to my mind scenes of twenty years ago and schoolboy days, when I had in one class with me a big, overgrown, dull country boy, five grades behind his age.

CHAPTER IX

A Retrospect

FIVE swift years have already flown by since the solar system became free of the nebulous frigid ocean in space and since the last of the Sixth Glacier receded beyond the Arctic Circle, and left behind it a barren land; ten years since the first warning cry of Stephen Dunraven, which was echoed so suddenly by the cries of terror from the northern lands. To-day I review in retrospect those terrible days when the polar

ice fields invaded the temperate zones, safe in the little red brick structure on the brink of the newer New York Bay, the new home of the "*Scientific News*." "B I B," sad to say, died about a month ago and now I am the editor. Old Stephen Dunraven was in to see me yesterday. He has grown fatter, grayer, grouchier. Now, however, he is a happy man. Three whole pages, amply illustrated, had I vouchsafed him for the story of the days when the spiders ruled the roost. The big, black cigar that he gave me was delicious, even though I had to be a very patient listener to an arachnid diatribe that took up the better part of an hour.

Also I learned that the Cordillerian ice sheet of many years ago was nearly five hundred miles wide and extended as far as Washington. As it came swiftly and steadily from the pole, it drove this spider race before its icy fury to seek newer homes in more southern climes, where the Fifth Glacier could never go. Then from the region of the Deewatin Ice Sheet, which, like an immense finger of destruction, reached down from the Hudson Bay countries deep into the heart of the Kansan plains, came another race of spider people, also fugitives from the boreal foe, and they, too, settled at the site of what today is the Mecca of all scientists. There the two races of spiders found the savage ape man, our tree-climbing ancestor, and made of him their hauler of stones and builder of cities. Later came wars, as wars will ever come, where two peoples dwell close to one another. And as the warring arachnideans slaughtered each other, the glacier coming from the north turned the summers into winters and the temperate winters into winters of Arctic climes. Nature, true to its law of destruction of all that is unfit for the place and time, drove the weak spider race ruthlessly into the sand-waste regions with her icy lash from the northern pole. Then the ape man lived wildly, amidst the ruins of old-time grandeur for countless years, in a glory which he never could understand. Time slowly buried them as it passed on beneath its waste of centuries till only the moulded tablets remained intact to tell of the history of these strange four-legged people who lived, loved, fought, wrought and died there, and then became one with the darkest oblivion, fugitives, like us, from the northern ice, they who had raised aloft a civilization and were contemporaries of the dawn man, the auroch, and the giant-elk.

In sharp, terse sentences, such an antithesis to his hollow voice, the amateur scientist spoke to me, and every word of his speech sounded like a command from a tomb.

"What strange manners of earthly life," he said, "even now lie buried beneath the soil, since the first bit of animism crawled out of the bathybian ooze at the birth of life, who can say? We, two-legged human-kind, are by no means the sole boosters of a rational mind. Only the over-egoed fool dare say he is."

He left a while later, a man who had lost everything, yet faltered not in that which he had chosen as a life work. A rebel forever at odds with the rest of the conservative world, one of the few of its dwellers, who help make progress possible by never crying surrender and by never being satisfied—a skeptic of an old man

long ago disillusioned by life, man and pleasures. Yet after his visit, somehow or other, I could not help but think that in reality there had been two Stephen Dunravens. One who had died during the Sixth Ice Age and the other who, sphinx-like, rose out of his shroud, a tender, more contrite man, born of the other's ashes, though he still dared to doubt.

THE great gardener had weeded his earthly garden only too well and left but one-third of its former one and a half billion to refill and recruit the world. Discontent and strife followed fast upon the heels of the settlement of the reclaimed lands. People still insisted upon recalling old boundary lines and their petty hatreds of the past. Men and women wanted power more than they wanted homes. Newer nations sprang up, north, east, south and west, over hill and dale, as soon as the ice had gone and the floods had abated. The first comers, naturally enough, settled upon the choicest of lands and wars soon followed. Then plague followed war as it often does, sparing neither young nor old, and the grim, bony man with the scythe easily settled the disputes that guns had failed to do. For ten years after the Sixth Glacier had joined the hoary past, the heterogeneous population of Europe, and for thrice that long, the more heterogeneous populations of Asia, grappled with itself, while those who had deigned to linger behind in the tropics fought the natives with equal fury.

On this side of the Atlantic, however, things were more quiet. A stricken one-quarter of a once one-hundred and twenty-five million came back in four years to a land of many million barren acres. Towns sprang up on prairies and on hills or in vales, and cities along rivers and bays. Farming commenced on the day that the first settler from the south set a rock down on the ground as a stake, and said that these few surrounding acres are to me and mine, home. As I write today, five years after the ice has left, at least for another thousand centuries, the New United States of America that extends from the Rio Grande and the huge Gulf to the icy top of the globe, is starting all over again, just as it did once, nearly five hundred years ago. Cities are springing up over the glacier-demolished terrain, where other cities once had been, on the water-girded site of New York City, on the broad lakefront where once Chicago stood, on San Francisco Bay, on Denver's mile-high altitude. Los Angeles is rebuilding with a furore, just as El Paso, New Orleans and Galveston are doing. The new homes everywhere are mocking the beaten icy foe. By now people only know from memory about the ravages of the Ice King from the poles.

The newcomers are still drifting in, slowly, every day—wary, heartsick men and women from the deserts of Mexico or from the plain lands farther south. Big ships, which had happily survived the big ice walls that for five years unmercifully swept the seven seas, are crossing the oceans back and forth, laden heavily with huge cargoes of food, timber and humanity, while the nucleus of a future railroad system is even now stretching its long fingers of steel into the heart of

mountain, desert and plain. Gigantic cargo planes are daily alighting to succor the inhabitants of locations where neither track nor broad highway has penetrated. Wise men, whose eyes could pierce the future's dim veil, are planting tiny trees on the hillsides and lowlands where, only so short a number of years ago, giant trees had stood unbowed. In the turmoil of reconstruction, the nightmare that was the Sixth Glacier is forgotten, and only mourned ones occasionally remind us of those terrible days, when the ice came down from the north and we went wild, yet we can almost forget them as we gaze up out toward the broad horizon and begin again.

Today's morning paper was filled with the spirit of reform. Europe, the five thousand-year-old hot-bed of war and international hatreds, tired of arms and worn by disease, decided to bury the hatchet and start a new world on a better social plan. A protocol was sent out to the rest of the earth's nations. Thus the idealist's dream of a Utopia may after all not be so far away. A catastrophe is sometimes the gift of the gods.

Most of the huge jetties are still standing, though the heating machines have long ago been taken down and put to other uses. Northern Europe and the lower and central parts of our own Atlantic coast are even warmer today than they were during the pre-glacial years. The winters are shorter and less harsh and the summers come early and linger long for the series of small jetties that raise gray, concrete backs out of the blue sea are still at their duty along our coast, pushing the warm equatorial waters of the Gulf Stream toward our shores and I, for one, say, let them stay.

NOW, allow me a bit of time for one more brief bird's-eye view of the world as it is today. The Sixth Glacier has become history already. New York City is made up of islands no more. The sudden rush of the ice fields and the consequent passage for almost five years of a mile thickness of moving ice turned both the Harlem and the East rivers out of their true beds, and now only the bigger Hudson flows into the bay where a newer and greater Statue of Liberty greets it day and night. The once huge metropolis of tall skyscrapers and Brobdingnagian bridges, of avenues of magnificent houses and of more than five million souls, is now the hearth and home of but a mere half-million, a long, drawn-out city facing the open and almost bayless sea. Here and there the faint trace of some street may still show, strange prank of the glacier, and every now and then one does come across some half-buried scrap of steel or masonry which the morning ice field had failed to carry away. The subway alone is the most intact, and although caved-in at scores of places and full of debris of all kinds, it still is the New York subway of ten years ago and New Yorkers daily look forward to the time when they shall be able to use it again. One mile of ice stood over it for four long years, but it had borne the burden nobly.

Both Japan and Britain had been pushed out of their sites by the glacier while little Iceland had been torn in halves and shot two hundred miles to the south. The Isle of Man is no more. When the Sixth Glacier

retreated, it was no longer there. In the antarctic part of the world, the glacier had been more merciful, probably because there was not so much to ruin. The ghosts of Capetown, Kimberly, Melbourne and of Sydney are to-day looking down from some municipal Paradise in the skies, upon the newer cities that have taken their earthly places. Sahara is a sea, one with the cerulean Mediterranean. Gobi is a lake.

Our own southern states, unfortunate victims of crazed mobs from the north, are once more breathing normally, and under the strain of the added millions, are living anew. Many of Cuba's newest population have refused to return to the states. They seem to like that hot little island, whose population to-day is thirty million.

But from Asia came uglier news. The yellow men from the north have decided to stay south of the Himalayas. China, consequently is barren and the Russ is pouring into its fertile southern parts. Japan retrogressed in civilization's scale for almost a thousand years, a tiny island kingdom full of hills and flowers, that proved so terrible a death-trap to its fifty millions. Now about one million little swarthy men and women live quiet bucolic lives in a barren, mountain land that was once opulent with pretty outlandish houses and blossoming cherry trees.

The Alps in Europe and the Rockies and the Sierra Nevadas here have caught in their grips and have refused to let go here and there a piece of the glacier as it went back. Now in many a crevice and gorge flow slowly down to the plain below, huge glaciers, offspring of a huger one, prodigals who would never return.

YESTERDAY was Christmas Day and the world forgot and made merry. In the new Paris, a little, unpaved city on the Seine, there was exhibited a relic picked up near the Morroccan city of Fez by a Moorish donkey-driver, a piece of the tall Eifel tower that had been carried across the wide Mediterranean by the moving ice, a mute witness of the pomp and glamour that once had been Paris. A week ago a farmer in Virginia unearthed the huge pyramid top-piece of the Washington Monument. One hundred thousand years from now, when the time will be ripe for the Seventh Glacier and the northern world will have to hurry south again, maybe some future Stephen Dunraven will pick up a piece of the Brooklyn Bridge or the White House and warn a sleepy world of the coming of the ice.

Just one more little picture ere I close. Clara, plumper now and quite matronly, and the major, now an army man no more, come to see me often. They, too, have settled in the new city of New York that stands facing the sea. Her father, still a bit grouchy and full of gout, is with them—the proud grandpa of two long-legged boys—still the same old pessimist nevertheless. He talks spiders with me, whenever we meet, sometimes, perhaps, glaciers, but never has he yet mentioned the many lost millions or the miles of car lines that were once upon a time his and were stolen by the ice. Old Hillsboro is still alive and happy over

MERNOS

By Henry James

I The Tube



My name is Henry James, and I am a farmer astronomer living in the south of New Hampshire. This name may mean little to some of you, but it is well known among the scientists of America since the finding of the tube from Mernos. It is due to my study of astronomy that the tube was found and the contents were given to the people of the earth, for had I been an ordinary farmer I would not, probably, have had enough curiosity to dig it out of the earth where it had fallen.

You ask where is Mernos? Mernos is the missing planet of the solar system of ours. I say missing planet, for it is a well known fact that there is a regular order in the way the planets lie from the sun, except between Mars and Jupiter. There has lain a gap until the facts about Mernos were published. It had been the idea of most astronomers that the asteroids were the fragments of the missing planet, which in some huge catastrophe had been blown to pieces, but we now know that the black planet of Mernos fills the gap and maintains the regular order of our solar system. Why it has not been seen is another strange thing. But all is now explained.

It was a hot afternoon in August and I was seated under a huge maple tree near my observatory trying to get cooled off, when there came a swishing sound and a white hot missile buried itself in the ground not ten feet from where I was seated.

"A meteorite!" I exclaimed. "I must dig it up if it hasn't gone into dust!"

I procured a spade and dug down and around the celestial visitor, which had buried itself to a depth of about 18 inches in the soft soil. I finally uncovered it and it lay there shimmering with the heat. My first glance at it showed that it was somewhat different from the ordinary meteorite in that it was almost a perfect cylinder in shape. I could not make out anything much about it on account of its red hot state. It took almost half of a day for the thing to cool so that I could pick it up, still warm, from its bed in the earth, and when I did so, I saw to my astonishment that it was a perfect cylinder, and instead of being constructed of the materials that ordinary meteorites are composed of, it was made of a

greenish metal! Near one end was a groove running around it. There was no doubt that the missile had been fashioned by hands, and that I held a message from another world!

I took the tube into the observatory and, putting it in a vise, applied a wrench to it—gently at first, then with increased pressure. But it did not seem to move. I tried turning it the other way and after a few moments the cap moved! Easily it came off after it was started and soon the cap lay in my hands. With trembling fingers I took the cylinder from the vise and up-ended it. A glass case fell out on the bench. But was it glass? It seemed to be, yet it gave like rubber. It was without a seam; apparently it had been formed around the contents, which were closely rolled sheets of paper covered with writing. Finally I took a pair of scissors and slit the container. The manuscript fell out and eagerly I picked it up. It was in a strange language and I could not figure it out.

I had to tell someone of my great find and the first person I thought of was Professor Margehtes, my next door neighbor. He was a German scientist, who had been exiled from Germany at the beginning of the great war on account of his pacifist tendencies. Coming to America, he had purchased the farm next to me. We had many ideas in common and I saw a great deal of him.

I got him on the telephone very quickly, for he happened to be in his laboratory when I called.

"Hello," came his voice.

"This is James, Professor."

"Yes. Vat iss?"

"Something big, I think. I just dug a meteorite out of the yard and it has a manuscript in it, in a language I don't understand."

"Vat? Say dat again!"

I repeated my information to the professor.

"Gott! I will be right ofer."

And he was.

"Vere iss it?" he asked.

I pointed it out to him and with shaking fingers he picked it up.

"Gott in Himmel!" he exclaimed. "It iss in German."

"Then someone in Germany tried to communicate with Mars or some other planet and it fell back on the earth?" I said in a disappointed tone.

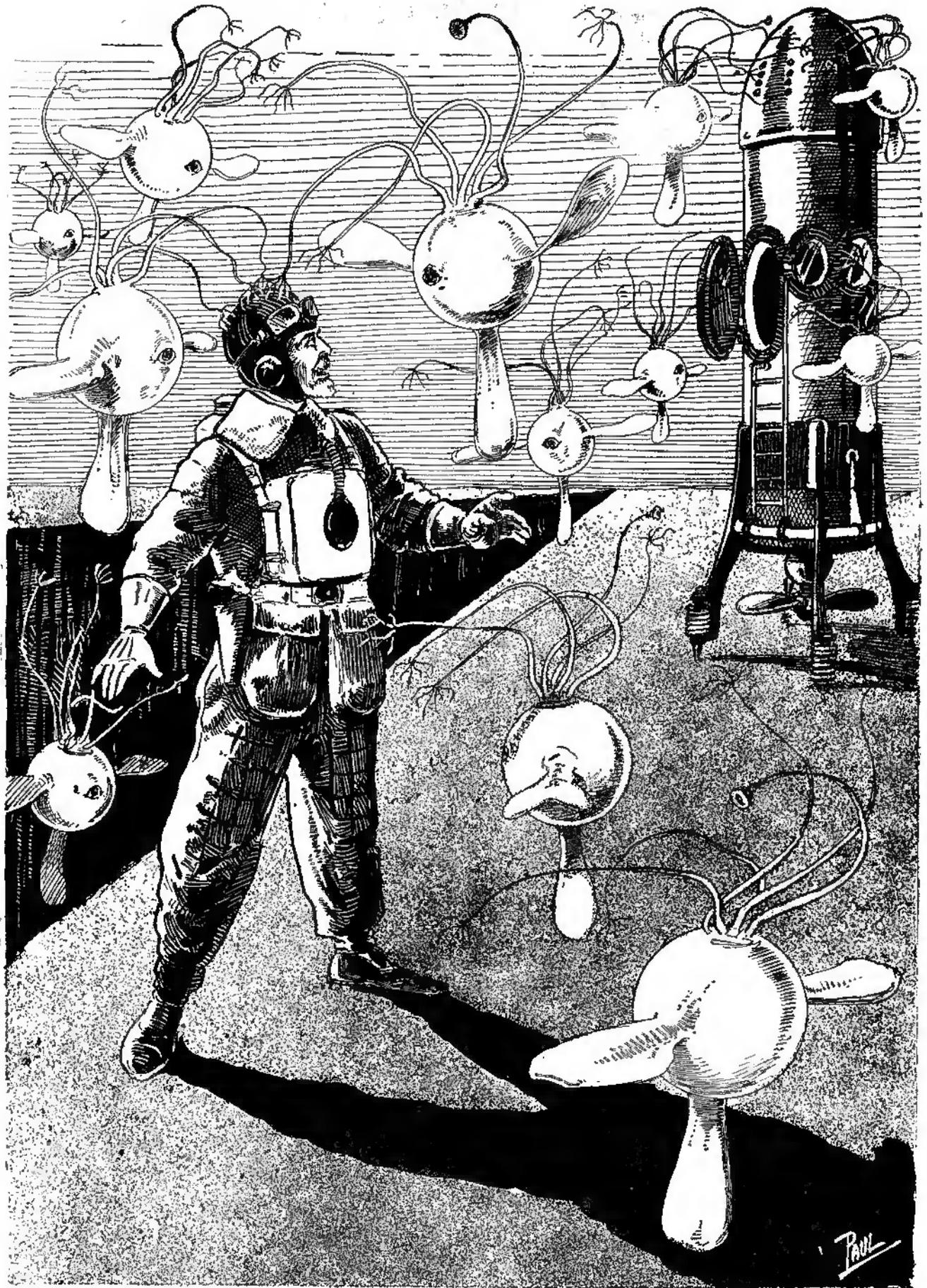
"Dot vas it. But vait! Vait! It iss vrum anudder blanet."

"Is it from another planet?" I asked, in astonishment. "How could they have the German language

TO MANY, it might seem that all of the planets in existence have now been discovered. Nothing could be further from the truth. Astronomers discover new planets every year. As a matter of fact, seven new ones were discovered in October, 1928.

It is true, that these planets are mostly of the asteroid variety and their orbit lies between Mars and Jupiter, and that these planets, also designated by the name of planetoids, are usually quite small. On the other hand, astronomers now suspect that there is an extra Neptunian planet far beyond the orbit of Neptune. Professor Pickering has even gone so far as to describe the supposed planet, giving its diameter, its mass and its orbit. But the planet has not yet been found in the telescope.

Mernos is a charming interplanetary story that will delight you. It might be called an "Interplanetary Extravaganza."



As it steadied itself in the air, I gazed at it in some apprehension, for I was unarmed, but it showed no hostility whatever—nothing but curiosity. Then suddenly the words were imprinted on my brain as clearly as if they had been spoken: "Whence came you?" . . . Then I became aware of others and turned.

on another planet, professor, or even know about it?"

I will not reproduce the professor's broken English but will merely give the conversation.

"They don't," said the professor. "This is from Professor von Altenberg who is on Mernos."

"And which planet is Mernos?"

"That I don't know yet. It may be Venus and it may be Mars. But how did he ever get there? I knew von Altenberg. He disappeared from the face of the earth just before the big war started. He said he had some kind of a rocket which would take him to Mars. I never believed it. Nor did anyone else, and we thought that the ridicule had driven him into retirement in some foreign country. But he has succeeded! He has succeeded!"

"Read it," I said.

"I will read it and translate it and you put it down. It is a story that must be given to the world, especially to the scientists. For I do not doubt that it is true. Now get ready."

"But where is Mernos?" I demanded again.

"We will come to that. It must be a planet we know nothing about or he would have called it by its right name. Mernos? I wonder."

I got out a bundle of paper and sharpened a few lead pencils and we began the transcription of one of the strangest stories ever told. What made it more strange was that it was true! It took us all that afternoon and four successive afternoons to get the whole story down in the form in which it follows. I am not a writer, so the reader will pardon any errors of grammar or syntax that may creep in, but I am endeavoring to give it exactly as it was written by Professor von Altenberg, and translated by professor Margehtes. There will be many doubters of this tale, but we have the cylinders of an unknown substance to substantiate our story, and there is the mysterious disappearance of von Altenberg to be accounted for. Now the astronomers are sweeping the sky nightly, hoping for a glimpse of the black planet, which sweeps along in its orbit, filling the supposed empty gap in the order of the solar system.

I will let the rest of the story be the tale of Professor von Altenberg.

II

The Rocket

THIS is the eighth message. I am sending ten of these messages to the earth in hopes that one of them will be found. They are all exactly the same except that each one starts with its own serial message number.

For reasons which will become obvious, I will never return to the earth, except in the astral. I will know if one of my communications is found and it will be revealed later how I will know.

My disappearance from the earth, if remarked at that time, has been forgotten by now. Time is different here than on the earth and I find that it seems to pass more quickly. Many things have transpired on the earth since I left, among other things, the hum-

bling of my fatherland. Ah, you ask, how can you know that and be on another planet? Wait.

I am Professor von Altenberg, once rated one of the leading astronomers of Germany. I was a professor at Heidelberg University when I began to experiment on devices to establish interplanetary communication. I believed that a rocket could be constructed that could be fired to Mars. This led to even deeper thinking and the consideration of the return trip, which could not be accomplished if explosives were used. Finally, after several years of experimenting, I solved the problem, or thought I had. I then began the construction of the car which was to take me to Mars and return. I will describe it, but not in detail, as the space I have to use in these cylinders is limited. Aluminum was used for the outer and inner shells, toughened by a process known only to me, which I will later give to the world, if communication can be established. I think it can. Between the two shells was a filling of asbestos packed tight. The cylinder was twenty feet in length and seven feet across on the outside, which gave it an inner diameter of six feet. But two feet of this was taken up by compartments that lined the inner wall, so that there were only four feet of clear space in the cylinder.

On each of four sides was a porthole of specially constructed glass, double, but so arranged that the vision was not distorted in any way. The cap of the rocket was of cashardened steel and filled with a complicated mass of springs to break the fall when the car should light. Space forbids me giving the intricate designs of the springs. That may come later. Just at the junction of the cap and the cylinder were four small propellers, which I hoped to use to deflect the course of the car, if necessary. I never tried these out, so can not say if they would be successful or not. Beneath the cylinder were four legs, about three feet in length, on which the car was to be poised, ready for its flight through space. Between these legs was the propeller, which was to give the car its start and carry it through the earth's atmosphere. Beyond that my cap, which was highly de-energized in the gravitational sense, would go for the body to which it was headed, pulling the cylinder behind it. The construction of the propeller, which is one of the greatest strides in propulsion, will also be given to the world later on.

About three inches from the base of the cylinder was a ring of a specially constructed alloy, which revolved over a series of magnets and generated power faster than it was used to whirl the propellers. You may doubt this, but I have proved it to my own satisfaction at least. In the base of the cylinder were the dynamos and other electric appliances for its propulsion. This left me a space in the car of four feet by eight. Plenty of room for one person.

I am going to cease telling of the details of the car, because my space is limited, as I said before. These messages are being sent on a Mernosian day, which is about every forty hours of earth time, for it takes Mernos forty hours to revolve on its axis. Twenty hours of daylight and twenty hours of darkness all the year around. When the sun sets on Mernos there is

no twilight, but a swift transition from daylight to dark, and vice versa. The temperature varies but little, and is about like that of the earth when the days and nights are equal.

The cylinder at last was finished and sat on its four legs, pointing to the sky. I tried to get scientists interested enough in the venture to help me finance the trip, for the building of the cylinder had impoverished me.

I met nothing but ridicule and finally the University took cognizance enough of my scheme to ask for my resignation, as they said I was too hairbrained to be a professor at the greatest institution of learning in the world. My cylinder achieved fame as the vagary of a crazy professor. These blows hurt and I determined that I would show these "know-it-alls" whether I was crazy or not. I sold all of my scientific paraphernalia and used the money to stock the car.

I had no ties to bind me to the earth and I was an outcast in my chosen profession, so I determined to strike out for somewhere, caring little where I landed.

I had a month's wait until Mars was overhead. That was a miserable period for me, for I was openly jeered at and ridiculed. Even the children pointed me out as the "crazy professor."

Finally the time came when the red planet was above. I made no confidant of anyone, but secretly prepared for the trip. I had water in a specially constructed tank that would last me for three months and enough provisions for six months. I was more sure of finding water at my ultimate destination than food.

When everything was ready, I myself began to doubt the feasibility of the thing. The jeers egged me on to one of the strangest trips that man has ever taken.

I got in the car by one of the two doors with which it was equipped and made them fast. Then I turned on the oxygen restorer, which was a wonderful contrivance invented by Dr. von Bethwig. A glance around the car showed me that everything was in readiness for the great experiment. Even then I hesitated to turn on the current that would send the car into space. But would it? A haunting fear began to possess me that the scoffers might be right after all.

Finally I walked over to the switch and threw it, with a mental prayer that the cylinder would go. A vibration in the car told me that the propellers were going and I waited for some motion to tell me that I was on the way. There was no motion. The car was a failure! I walked over to the door and threw it open to get out. Suicide loomed before my eyes. Then I gasped with astonishment. The car was in the air and rising fast!

III

Mars

I CAME near falling out of the car in my astonishment. But the air was getting very rare and I made haste to shut the door. It was a success! But was I headed in the right direction? That thought sobered me up and I went to the periscopic tube that led to a mirror on the point of the cap. Yes, I was

headed right. Mars was directly above me. I went to the portholes and watched the earth, now a vast concave, as it slowly receded. I went to the etherograph, a delicate instrument I had invented myself, which gave the speed through space, and soon found that I was traveling at the rate of about 200 miles an hour. But would the speed continue to increase as soon as I left the earth's atmosphere? That was the important question.

I curled up in the car and slept, for the first time in two nights. When I awoke it was pitch dark in the car. I went to the porthole and peered out. I was still going. The earth was a huge black mass that covered the entire visible heavens, slightly luminous at the edges. Ahead the red planet still glowed, but with a splendor not seen from the earth. Everywhere was the intense blackness of space broken by the brilliant points that represented stars. The outside temperature had fallen to 459 degrees below zero, and it stayed at practically this point all the time I was traversing space.

I will not go into details about the trip. Suffice to say that the car attained a speed of 200,000 miles an hour before I started the propellers in reverse and the speed began to decrease. So well did I time it that on the twenty-first day out I landed on the surface of Mars, with hardly a jar. The car fell over on its side and I got ready to alight. My atmospheric gauge told me that the atmospheric pressure on Mars was just about half of what it was on the earth. I couldn't ascertain the temperature as the thermometer had not yet settled after its prolonged run at the absolute zero.

One of the doors was uppermost and I dragged out a short ladder that I had for the purpose and opened it cautiously. A rush of air from the car and then I felt the air of Mars, warm as a summer day on the earth. Another theory of the scientists gone! I got out and looked around and exulted in the fact that I had shown all those to be wrong who had ridiculed me. I stood upon Mars! The first man from the earth! I started to dance and then I was startled. Instead of hopping up about ten inches, I went up into the air a couple of feet! The planet being almost half the size of the earth, the attraction of gravity was consequently less. I found that I could leap nearly six feet straight up into the air. But the exertion fairly winded me on account of the thinner atmosphere.

All around me was a vast sandy plain, stretching away as far as the eye could see, without a mountain peak to break the monotony, nothing but an enormous gulch that lay on my left. Far into the distance, as wide as the grand canyon and as deep, it stretched, and it came to me at once. Here was the solution of the canals of Mars! The canals of Mars were nothing but huge cracks in the surface of the planet. Not hand-made at all.

Vegetation there was, but it consisted as far as I could discern, of only one plant, a short growth, with dark yellow leaves and purple veins. Only about four inches tall, it seemed to grow in bunches on the desert. Mechanically I broke off a frond and a thick purple sap exuded. I tasted it. Then I tasted it again. It

was delicious. The thought that it might have been poisonous never entered my mind and I ravenously devoured the sap of the plant. Soon I felt that I had eaten a square meal.

The soil of this desert was of decomposed granite. Evidently the planet was so old that the mountains had all been eroded into sand—at least as far as I could see.

Not a bird, not an animal, not the least trace of one, nor of human life. All was desolation. But what was that? I looked again. Just on the edge of the gulf stood a ruined wall! There was no mistaking it. It was the relic of an ancient wall, built by hands. At one time there was life on this planet, but how many ages ago? I walked over and examined it. It was built of a stone, whose like I had never seen on the earth, of a coarse texture, brown- and yellow-streaked. I picked up a small piece and gave an exclamation. It was heavier than iron, which meant that it would have been as heavy as lead on the earth. The wall was about three feet in height and formed a perfect square. What it had been built for I could not imagine. The walls had never been any higher, for there were only a few fragments lying around and they came off from the top of the wall where ages had loosened the cement that held them together. It might have been a hundred years old and it might have been thousands. Aha! I had it! The walls were the tops of the walls of a building and the shifting sands had covered them so that the portion that I saw was all that remained above the surface.

Obviously, this was the solution of the situation.

I stood gazing upon the scenery. The sun shone as brightly as it did upon the earth, notwithstanding the fact that I was forty million miles further from it now. Flat, flat, flat. Nothing to rest the eye in the vast expanse of desert. The gulch was only a few hundred feet away and I walked over and looked into it, then drew back with a shudder. It was fully four thousand feet to the bottom and twenty miles across. How far it ran, I did not know, but the canals of Mars so called, covered nearly the entire surface, so the gulch may have run from pole to pole for all I knew, or cared. There were indications of water erosion in the gulch, plainly showing that at one time a mighty river ran through it. But where was the water now? Had the drying up of the planet spelled doom to the inhabitants, or had they been carried off by some terrible cataclysm before the water supply had failed?

Here I was, one of God's creatures, alone, as I supposed, upon a tiny speck in the vast universe, and forty million miles from the planet where I belonged. How many more of the tiny specks carried their load of humanity in the vast realms of space? How many had lived out their span as had this one? How many were just beginning to teem with human life? I stood musing on the inscrutable ways of the Great Architect of the Universe, forgetting my weird and strange surroundings altogether.

Suddenly I was recalled to things Martian by a light touch on the shoulder. Rapidly I turned around and then I saw it.

IV

Manos

SUSPENDED in the air about three feet off the ground was a spherical body about a foot in diameter. Without visible means of support the thing remained there, as steady as a rock. Surmounting the spherical body were five tentacles, each about eighteen inches in length. Four of them had fingers at the extremities while the fifth had an orifice.

The body was so nearly translucent that I could see the blood pulsating through the veins. Underneath was a rudder-like appendage that waved to and fro like the fin of a fish. There were also two of the appendages at the sides of the globe. It had one eye, set in the middle of the globe and very much like the eye of a human being, except for the fact that it was purple in color, with a red pupil. The globe itself was of a reddish yellow shade, approaching orange.

As it steadied itself in the air, I gazed at it in some apprehension, for I was unarmed, but it showed no hostility whatever—nothing but curiosity. Then suddenly the words were imprinted on my brain as clearly as if they had been spoken:

"Whence came you?"

I pointed to the sky and answered:

"The earth."

"Where is the earth?" came the question.

No need of language here! The thing could read thoughts as readily as I could read a book and could project its thoughts as well. Project them so well that I could get them as plainly as if spoken.

"The bright red star you see at night," I hazarded.

"Polus," thought the thing.

Then I became aware of others and turned. At my back were six more of the globes, gazing at me with undisguised curiosity.

"What are you called?" I asked, aloud, but the vocal part was unnecessary.

"Manos," came the thought.

"And what do you call this planet?"

"Manova."

Then the globes floated together and held a spirited thought conversation, some of which I was able to get. After they had conversed in this manner for some ten minutes, the one who had first spoken to me, or I should say, thought to me, "telepathed" to me as I may term it:

"Come with us to the great Samozar; he would like to see you."

Readily I consented for I saw that there was nothing but friendliness in their attitude, and the guide started ahead while the rest followed at my side. They were actually fishes of the air, and the fins kept them going in the direction that they wished. I afterwards found they were very light, being but a little heavier than the atmosphere.

We went over the sands of the desert for about a mile and then we came to a vast circular hole in the ground, nearly a hundred feet across. I looked down and saw that it was about sixty feet to the bottom and spiralling it was a ramp that led to the bottom. ¶

went down the ramp while the Manos floated down the center of the pit, timing their motion so as to keep abreast of me. Gently as a feather falls they wafted themselves to the bottom of the pit.

At the bottom was an arched opening and we went through it into a brightly lighted passage way. I have never figured out the source of the light they had, but it must have been a kind of radium energy that would last for ages. The lights were in round globes, suspended by a thin wire from the ceiling, and I could see that there was no place for a current of electricity to enter them. At intervals were lights of blue, green and violet, which gave a beautiful color effect in the corridors.

The passageway must have been nearly six hundred feet long and it opened into a circular room that had about ten doors leading out of it. My guide conducted me to a doorway on one side and through it into another passage that led for a hundred feet on a downward slant into a small square room.

And here was the great Samozar! Upon a cushioned throne at one side of the room lay one of the globes, but almost a third bigger than any of those who had accompanied me. He was of the same shade as the others, however.

"What is this?" came the thought.

"He comes from the sky," said my guide.

"How did he come?" asked the Samozar.

I described the way I had come and the Samozar nodded in understanding. At least, he thought he understood. Since I have learned more about the mental processes of a Mano, however, I doubt whether he did.

"What are you called?"

"A man," I said.

"How odd! You a man and I a Mano. Perhaps that is where the former people of this world went to."

"Then there were people like me on this planet once?"

"So it is handed down, but so many countless ages back that we dare not think about it. Once the outside of this world was covered with huge cities of stone. They are naught but ruins now. Who lived in them or where they went, we do not know."

"How long ago did you build this cavern?" I asked.

"We did not build it," was the reply. "It was here before any Mano can remember."

I found that the Manos did not have any traditions of what must have been their great past, when the brain of the Mano dominated the sphere. All they seemed to know was that they lived. Truly a decadent brain. They knew that there were three tribes of the Manos still living on the planet, in different caverns, but the race was fast dying out through diseases that they were too indolent to combat, and didn't know how to if they wanted to. Altogether about five thousand of the Manos survived on the planet. They were of a composite sex and the young Manos, which were few nowadays, came from eggs. The average life of a healthy Mano was about 150 years. Death came suddenly, for there was nothing but the brain to die, and lingering sickness was practically unknown.

Their burial custom was simple in the extreme. When a Mano died, his corpse was carried to the edge

of the great gulch and thrown over. There were no other forms of life on the planet except in the small seas that still existed at the poles. There a few fishes survived. The Lupos, the sap of which I had eaten, was the only vegetation on the planet and it was everywhere. It was watered by the numerous fogs that swept down from the poles.

I spent a week on Mars and found that there was very little to learn. The Manos knew next to nothing and the only relic of their past greatness was the ability to transfer their thoughts. I visited the ruins of one of the cities that was near the cavern and found that it was indeed the relic of a lost race. What were once magnificent buildings stood in ruined grandeur. Over a few of the doorways that had not fallen were inscribed strange characters. I jotted down several of these, which resembled English characters greatly.

No traces of pottery or other articles could be found, though I hunted very sedulously through the ruins. All but the shattered walls were gone. Then I made ready to return to the earth with my information—information that would astonish the world, if the world would believe it.

V

Lost

HOW was I to get the cylinder in an upright position? That question troubled me. I studied it from every angle. I put it up to the Manos. But they could give me no aid. Had a thousand of them been able to get around the car they might have raised it. As it was, they were useless to me. Aha! I had it! The solution was plain, providing the sandy soil was deep enough.

I would dig down at the base of the cylinder and work the sand out from under it. Then the cylinder would slide into the hole and I could tilt it the rest of the way. It seemed easy, but I worked for a week before I got the rocket in a nearly perpendicular position. Finally to my intense gratification it was accomplished. I had it pointed directly at the earth. The Manos stood around in curious groups as I toiled at my task, and if they could have cheered, they would have done so when the cylinder slid down into the pit I had dug at its base.

I was all ready to start and I climbed into the car that night as the earth drew near to the spot that I wanted it in. When, by the periscope, I saw the cylinder pointed directly at it, I threw in the power and again came the vibration. This time I did not open the door. I looked through the porthole and saw the surface of the red planet slowly recede, which it did more slowly than had the earth on account of the thinness of the atmosphere, which more than counteracted the lesser gravity. I was homeward bound after one of the strangest trips, if not *the* strangest trip, that mortal man had ever attempted!

On the sixth day I had attained a speed of 100,000 miles an hour and was congratulating myself that in two weeks I would be home again to give the scoffers a taste of their own medicine, when there came a

violent jar and for a moment the car spun like a top. I was thrown here and there and received a number of painful bruises before the car straightened again. Hastily I rushed to the portholes and there, skimming away, was a gigantic black mass. I had just escaped being smashed by a giant meteorite! Had it been a few inches closer, my career would have ended then and there, for the flying body would have burned the car to a molten mass by the sheer impact. As it was, it just grazed one of the legs, I afterwards found, and tore it loose.

But where was I headed for now, and what would be my fate? I was practically lost in the boundless realms of space, for the earth was no longer dead ahead; it was almost in my rear and I was going back in the general direction of Mars. But I saw that I would miss that planet by a long ways. My only hope was to land on one of the asteroids and from it head my cylinder again towards the earth, so that I could get to my ultimate destination. Forty million miles to go before I got into the orbit of the asteroids, at least, and then no surety that I would hit one of them! The only thing I could do was to go at top speed until I was within several million miles of the orbit of those bodies and then slacken the speed and trust to God. But somehow or other I was not downcast at my ill fortune, for I seemed to have a feeling that all would come out right. Should I miss any of the asteroids, I would most likely be condemned to rove the areas of space until I died of starvation, and then the shell would finally be cast on some far-off planet to cause wonder to the inhabitants thereof. But this did not seem to worry me for some reason or other. I would come through!

For eight days I traveled at the rate of 200,000 miles an hour and then I reversed the propeller and began to slacken. There seemed to be some body pulling me along, but a close scrutiny of the ether ahead showed nothing in sight. Slower and slower grew the speed of the car and then, looking out of the periscope, I saw a black body ahead and approaching fast. I was going to make a landing! I wondered how hard I would hit. I could not slacken the speed any more. What was the body ahead? A dead world? It must be, for it did not shine with any refracted light, which denotes an atmosphere. Would it be possible for me to leave the car to re-set it, or would the temperature be that of infinite space and too cold for me to survive?

That was something that could only be known after I had landed. Nearer and nearer drew the huge black sphere, in the orbit of the asteroids, where no such body should exist. Its deadness had prevented it from being seen from the earth, and yet that was a strange thing, for the body should show some glow when the sun's rays fell on it. I could figure out that it was a trifle larger than the earth. Ah, this was the missing planet of the solar system, but it was dead. Dead, and I would be, too, ere I could get away from it. Well, if it was the end, I would meet it like a man.

Suddenly, like coming from darkness into light, the planet took on a luminosity! And I was in an atmosphere! But I was traveling at the rate of 200 miles

an hour. The periscope was useless; it was covered with vapor, caused by the warmer air of the planet striking the glass of the periscope and the lenses, thus clouding them up. I was going to hit and hit hard. It was the end! I sat down on the floor of the car and mechanically put my arms over my head. Why, I don't know, as the shock would be so violent that I had every chance of being dashed into a pulp at the opposite end of the car.

Then came the shock! But it was not the shock that I was expecting, for the cylinder shot into the waters of a sea! Down, down, went the cylinder until I began to think that the dense pressure of the water would crack the seams, or collapse the cylinder. As I was about to give up hope in the creaking car, it stopped its downward flight and began to rise to the surface. But the damage was done. In one end of the car a thin trickle of water showed where the seams had been sprung, ever so little, but enough to finally fill the car with water and drown me. I could not swim a stroke. Mechanically I shut off the reversed propellers. Then daylight flooded the cylinder and I was floating on the surface.

The doorway was right on the top, fortunately, and the car rolled but little. I got out my ladder and climbing up opened the door and peered about. I was in a great ocean, but all was quiet and peaceful.

VI

Ashore

AS I said, I was in a mighty ocean, apparently, but dead ahead and a mile distant was a shoreline and a sandy beach. Back from the beach was a great forest. The water was rising in the cylinder and my only hope was to get it ashore or nearly so. I started the propeller and the cylinder moved ahead through the water. Nearer and nearer drew the shore and when we were about a quarter of a mile away, there came a shock and the cylinder was aground! But how to get to shore was the next problem. The cylinder had settled in the water until it was a scant eight inches between the surface and the door, and the vagrant waves were breaking in it every once in a while. Had the waves been anything like the waves of one of our earthly oceans I would have been sunk long before I had gotten this close to shore.

If I had been able to swim, I could have made it easily, but I couldn't swim, and drowning stared me in the face after breasting the terrors of interplanetary space. But the tide? Was there a tide? At low tide I could probably wade ashore.

I made a mark on the side of the cylinder and anxiously began to watch it. Fraction by fraction the water rose. The tide was coming in. There was a little hope, however, in the fact that it was rising so slowly, for that indicated it had nearly reached its height. The water was even with the door of the car ere it began to go down again and I was drenched to my shoulders. Besides, a light wind was coming up and the waves were getting a little higher. Then the water began to recede—very slowly it is true, but every

slight recession helped. I began to take on new hope.

The sun, which was a red globe in the east, was slowly sinking behind the forest. It would be dark ere I could get ashore, but I was resolved to do so before the tide rose again, regardless of what unknown terrors might lie in wait for me in those woods.

I shouted several times but no answering hail came from the woody shore. Apparently I was on an uninhabited planet, or at least in the uninhabited part of one. Anxiously I watched the water line in the twilight of the strange planet. Not a sound of bird or beast came from the woods—the breaking of the surf upon the sandy beach was the only sound that assailed my ears. Down, down, went the water line, ever going faster and faster and my hopes rose correspondingly. It would be but a short while until I could venture forth. But the darkness fell and the stars came out, shining with a sort of dim luminosity that was almost uncanny, not the twinkle that they displayed on old mother earth, but a steady glow. Far off to the west hung two red planets or stars, almost in a straight line, and I had no doubt that they were the earth and Mars. Forty and eighty million miles away they appeared the same size, because of the fact that the earth was twice as large as the red planet.

At last I judged I could wade ashore and I slipped off the top of the car into the warm water of the unknown sea. The water came to my chin, and I cautiously advanced a step or two. It got no deeper, nor did it seem to get any shallower. A few more steps and I slipped down over my head. Frantically I ran ahead through the water, holding my breath and then my head emerged again and I was in shallower water. I had stepped into a hole in the ocean bed. Shallower and shallower got the water and soon I was only waist deep. Then I fairly shouted with joy as I ran the balance of the way:

“Saved! Saved!”

But was I? What unknown terrors might lurk in those forests? Little did I care. I was ashore and that was enough. Tired and hungry I lay down under a tree and quickly was fast asleep.

I awoke with a start. It was daylight and the sun was about an hour high. I had the feeling that there was a presence near me, but a close scrutiny of my surroundings failed to disclose anything, though the feeling that I was being watched kept its hold upon me. I shook off the feeling, partly, and began to think of something to eat, for I was hungry, as well as wet. Near me was a tall bush with a bright red fruit upon it, which looked good to the eye. I reached up to pick one and as clearly as if they had been spoken, the words were impressed upon my brain:

“Don’t touch it.”

I jumped and looked around. There was not anything or anybody in sight. Yet the warning had been very plain. I started to reach again and then desisted. Over a little farther was a short bush with yellow globes of fruit upon it. I walked over to it and reached for one, expecting to get the warning message again. But I was hungry and determined to eat one anyway, warning or no warning. But the warning did not

come. So I took a bite of the fruit and ate it rapidly. It was delicious, having somewhat the taste of a banana with a pineapple flavor. Six of the fruits appeased my hunger. Then I began to take stock of my surroundings. The trees and bushes were very like their kindred on old mother earth, the ground was covered with a short grass of a deep green color, and there were some flowers. One in particular I noticed. It was fully ten inches across, of a deep purple, with red edges and a brilliant scarlet center.

Then I saw the first life of the strange planet. Out of the woods came a great bird, almost as tall as I was, and brilliantly marked. The body was scarlet with white spots. The tail, shaped like that of a peacock, was many hued. It had a short blue neck surmounted by a very large head, which was shaped like the head of an earth bird. It was wingless and soundless, as I quickly learned. Upon the head was a tuft of purple feathers.

Calmly and in a dignified manner the bird approached me, showing not the least trace of fear. It was either used to human beings, or else it had never seen one before. Anyway, I knew that it had nothing to fear in the forest, which was encouragement for me, too. It walked around me in a circle with its head cocked on one side, and as I held my hand out, it pecked at it gingerly with its long bill. Then it turned, and quietly and dignifiedly walked back into the forest.

I scanned the woods carefully but could see no further trace of life. Then I turned towards the sea. Far off in the west a speck was growing larger in the sky. Was it a gigantic bird or an airplane or airship? I was not destined to know, for a twig cracked behind me and rapidly turning, I had my first glimpse of a Mernosian.

VII

Lorenda

CALMLY and unafraid he advanced toward me, and I will take this opportunity of describing him, for he was a representative type of the Mernosians. He was clad in shimmery green tights, with a doublet of yellow, and with blue shoes that resembled leather, though I have since learned that they were made of the fibers of the *bolu* tree. Upon his head was a conical cap of a greenish metal, like the metal that this cylinder containing the message I am sending to the earth was made of. Upon his shoulders was strapped a tube of the same material as the cap, about ten inches long and about two inches in diameter, from which two wires led to a medal or small plate depending from his neck and which contained two push-buttons. Rising from the cap were two small antennae which trembled in the light wind that was now blowing.

As to his personal appearance, he was exactly like an earth man, except for the fact that his features were delicate, more spiritual, and his complexion rather pale.

When he had advanced to within a few feet of me he fixed his eyes upon me, and as plainly as if he had spoken, came the impression on my wondering brain:

“Are you from the earth or from *Norros*?”

I was astounded. Here I was on a strange planet and the inhabitant of that planet surmised that I had come from the earth! I couldn't understand it. My mental faculties were in a daze and I could not even think an answer.

"You are from the earth," he thought, positively. I say, he thought, for he did not speak.

"How did you know it?" I asked aloud. He cringed a little as I spoke and I saw that he was unused to sounds, so I tried to remember to think my questions and answers thereafter.

"Because only Norros and your earth—in this solar system—have the same kind of people as we. You must have come from one of the two, because the people of the planets of other solar systems, are too far away to reach us."

"How do you know we call it the earth?"

"Because I have been there often."

I gasped in astonishment. This was beyond me. Here, upon a hitherto unknown planet, I was meeting a man who had visited the earth. How had he made the trip? These people must be far in advance of the people of the earth, to be able to travel thus.

"What do you call this planet?" I asked.

"Mernos," was the reply.

"How is it that it has never been discovered by the astronomers of the earth?" I asked, in wonderment.

"Because Mernos is surrounded by a belt of unknown vapor that does not reflect back the rays of Rhdor, or the sun, as you call it. All of the rays are absorbed by this vapor and retained and transmitted to our sphere. This renders Mernos invisible to the puny instruments of the earth."

"In what kind of a car did you make your trips to the earth? How is it that no one has known of your visit there?"

"Answering your first question: we traveled in no car. The mind alone has made the trips, for know you, man of the Earth, we Mernosians can detach the mind from the body and travel at will among the far-off stars."

"Himmel!" I exclaimed, and that was all.

He smiled and waited for my next question. As soon as I could get my breath, I asked it:

"How much ahead of us are you in progress?"

"Thousands of years."

"Thousands of years?"

"Aye, about four thousand years, roughly speaking, starting from the time when conditions were the same here as they now are on your earth. But you are making rapid strides in the right direction, though there is a terrible new conflict raging on your planet. This new conflict may complicate matters considerably.

"Between whom?"

"Austria and Germany on one side, and the allied powers of France, England and Russia, on the other."

"There was uneasiness when I left, but no rumors of war. Truly it amazes me to know that you know what is transpiring on the earth. Perhaps you can foretell, also, who will win the conflict?"

"It is not in the mind to foretell. No one can say. The central powers may win; then again, they may not."

"I am a German," I said, a little proudly.

"Then your sympathy will be with Germany. However, you will get over that, for I believe you will remain here the rest of your life."

"I don't think it, I know it, unless you can get my cylinder out of the ocean and repair it."

"It can be done," he said seriously, "but I think you will elect to stay here, when you know more about our life."

"What is your name for the earth?"

"We call your planet Jullo. You call Narro, Saturn."

"But come," he continued, "let us go before the council of Nine. They will be anxious to see you and hear your tale. You are the first inhabitant from another planet that has set his foot on Mernos."

"In that way I am ahead of you even, am I not?"

"Oh, no. Long ere your pyramids were built, long ere the sinking of your lost Atlantis, one Horro Milla made a car such as yours and flew to Mars and back. At one time interplanetary traffic was talked of, but it was abandoned because one Sirro Polu discovered the ways to transport the mind through space. Why take a month or more to go to one of the closest planets, when the mind can be transported in an instant to the farthest limits of the universe?"

"No need at all," I agreed. "Will I be able to learn to transfer my mind to other planets?"

"That rests with you alone. You will probably stay with us as long as you live, though we will give you every assistance if you desire to go back to Jullo. The secret of mind transmission may come to you also, if you have a receptive mind, and you may visit your earth in the astral and roam through boundless space at will. But you will have to study and concentrate. There will be no necessity to build ships and devices for safeguarding the physical body from the various interstellar dangers and inconveniences. The astral body needs no such form of protection."

We had been walking through the forest as we talked, and we now came out on a beautiful green meadow with two low hills ahead of us, separated by a road.

"Beyond those hills lies Lorenda," said the Mernosian.

"What is the average length of life here?" I asked.

"Three hundred years," came the amazing response.

"And how long is your year?"

"Just two of yours. But when I said our life span was three hundred years, I meant three hundred of your years."

"What is your religion? Or are you too far advanced to have any?"

"That is a foolish thought. You can not be too far advanced to have religion. We worship Zerno, the same as your God, the creator of the Universe. But we do not see him as a personal being, sitting on a bank of clouds or on a golden throne. God is all good. We have no conception of hell as many teach it on your earth, for there is no hell, in our minds. Hell is of your own making."

By now we were cresting the hills and as we came to the summit, I gasped in astonishment.

VIII

Government

LORENDA the beautiful! Spread before me, and apparently covering a space of ten miles each way, lay a marvelously beautiful city. Skyscrapers were there, but they were more beautiful than any I had ever seen upon the earth. The skyline was not irregular, but symmetrical. Here and there a dome or a minaret pushed its head into the pale blue of the Mernosian sky. At the four corners of the city were four spidery towers of steel, or of a metal like steel, with a broad platform on the top, and from one of which a long cylindrical airship was rising straight into the air.

But what amazed me more than anything else was the fact that the air was literally filled with small figures that appeared to be Mernosians.

"What are those figures in the air?" I asked.

"They are Mernosians," was the startling reply.

"But how do they stay in the air?" I asked.

"By virtue of this little tube you have noticed on my shoulders and wondered what it was for. It is done by radium and radioactivity. You will find out more about it later."

"Himmel!" was my outspoken exclamation.

We seemed to be the only ones walking, and I mentioned it to my guide.

"I walk because of you," he replied. "Were I alone, I would transport myself by the tube. No one thinks of doing much walking here. The transportation by the tube is easier and quicker. You will be doing it, too, before long."

"I would be afraid of falling."

"There is no danger. Should the power fail in one station, the next one is close enough to prevent you from falling."

"Suppose something happened to the tube?"

"The tubes are perfect. Not one has failed in the last four hundred years."

"How big is this city?"

"Lorenda is ten of your miles each way, and contains a million and a half people."

"How old is it?"

"Five thousand of your years. It was first built by Mordos X, the last king of Mernos."

"Then they are all republics here, as I would naturally conclude, since you have progressed so far."

"One republic."

"You mean the whole planet is under one government?"

"Precisely."

"Has the ruler much power?"

"There is not one ruler. The government is vested in the Council of Thirteen, one from each political division. These political divisions were once the ancient kingdoms of Mernos, the principal ones at least. Each one of these divisions is ruled by a Council of Nine, who attend to local matters. We are now going before the Council of Nine of Lorenda."

I was too much lost in the wonders of the city to ask any more questions for a time. Magnificent it was, beyond anything I have ever seen, with no harshness

of architecture anywhere. Here and there a large motor car went noiselessly by, one loaded, one empty; but not a pleasure machine did I see. I was going to ask the reason for this, and then it came to me that with the tubes, vehicles were obsolete except for freight hauling.

The streets were paved with a substance that resembled asphalt, except that it was of a dark green color. The sidewalks were wide and of a bluish green stone, which was very restful to the eye. I remarked this to the Mernosian, and he said that experiment ages before had proven that this color was the easiest for the eye. The streets were uniform in width and fully eighty feet. There were no narrow streets or alleys, and the city was laid out in an absolute checkerboard form. There were no small residences; all were tall buildings. The lower floors were given over to what I supposed were shops.

"Here is the building of the Council of Nine," said my guide, and we went into the magnificent building, over the door of which was an inscription which means, "Let the just govern the just."

Once inside the great doorway, we stood in a beautiful hall of reddish marble, paved with a beautiful mosaic of flowers.

A red clad Mernosian approached us.

"A visitor from another planet," he thought, evincing not the least surprise.

"Yes," thought my guide, "I am bringing him before the Council of Nine."

"It is fortunate that they are in session now. I will advise them of your arrival." He left the hall and went into a side room, from which he returned very shortly.

"The Council awaits you," he said, and then ushered us through the doorway into the room of the Council. I expected to see a group of long-bearded men sitting around a table, and in this I was disappointed, for they were all young-looking men and were lounging in rocking chairs, which had a sort of desk fastened to one arm. One was clad in black, the other were dressed in yellow. Later, I learned the significance of colored clothes on Mernos. The highest person in a Torman, or political division, wore a suit of black. The Council wore yellow. State officers of a lesser nature and overseers wore green, as did my guide. Ordinary persons were allowed to wear any color they wanted except those noted. The one in black directed his thoughts at me:

"I see that you expected to find us with hair on our faces, is it not so? There has been no hair on the tropic earth, then again back to normal, and later to two exceptions, where there was a throw-back to ancient times. Hair was unnecessary, so it disappeared."

I had gotten past being amazed at the ready reading of thoughts possessed by this great race. I can only wonder now when the people of the earth will advance to a similar state, and do away with all deceit, envy and crime.

"There may be things about us that are strange to you," continued the black-clad one, "but your people are familiar to us. We have visited your planet more

times than we can recall. We have endeavored to get into communication with some one of the earth. Thus far no one has gotten far enough advanced to communicate with us. However, it may be that through you a message will finally reach the earth."

"Then there is nothing I can tell you about the earth?"

"Nothing. But we can tell you a great deal about your earth that you do not know. For instance, do you know that a tropic era is approaching your earth, an era in which the ice caps will be melted from the poles and there will be no cold spots?"

"I do know that the temperature is said to be gradually rising," I replied.

"It is true, and it is no idle prophecy. Many thousands of years ago was a glacial period on your earth, and before that the Carboniferous age, when all was warmth and tropical growth was in profusion. Before that was another glacial period, and before that another warm time, and so on back to the time when the earth was evolved from a nucleus. You no doubt know that our solar system traverses a regular orbit, but you do not know that it completes a circle of that orbit in a million years. At one end of the orbit there is a belt of warmth and at the other the intense cold of absolute zero. The earth and the solar system are now on the edge of the warm belt, which explains the rising temperature of the earth, already noticeable enough to cause discussion among your scientists. For ages the earth will swing through the warm belt and become a tropic earth, then again back to normal, and later to another glacial period, and so on."

"How do you know all this?"

"We of Mernos know the uttermost secrets of the universe. We traverse the boundless realms of space at will and naught is hidden from our prying minds."

"Tell me. Are the other planets inhabited?"

"Mercury is inhabited by reptiles, Venus by intelligent beings who have developed through the birds, and are consequently gigantic birds possessing an intelligence on a par with the inhabitants of your planet. Mars by globes—"

"I was on Mars before I came here," I interrupted.

"Then you know of the Manos. Saturn's moons are inhabited by a race like you, but in development date back to the time of your Julius Caesar. Both Saturn and Jupiter are in a gaseous condition, so there is no life there. Neptune is inhabited only by insects of gigantic size, of which the spider, as you know it, is the dominating intelligence."

"Then Neptune is the last of the planets of this solar system."

"Yes. There are none beyond it."

"How long does it take this planet to revolve on its axis?"

"Our days are just forty of your hours long, and our hour, or Lumo, is practically the same as yours. From season to season we have twenty hours of daylight and twenty hours of darkness. Our twilight is short, as you have undoubtedly noticed. We have an equal temperature the year around, and the temperature is the same from pole to pole. That is occasioned by

that ring of unknown vapor that surrounds us and wards off the absolute cold of outer space, or rather keeps the sun's rays on our planet after they have penetrated it."

IX

Filos

"NOW," continued the leader, or Patrot, as he was called, "you will be afforded every courtesy while here, and your staying will not be compulsory. If you feel that you want to go back to the earth, we will assist you in every way. We can duplicate your machine for you and even improve it. The case will be made of Arror, which is the green metal, which, when alloyed with certain other metals, will destroy the power of gravitation. But we would like you to stay with us a month or so before you decide what you will do. Have you any near and dear relatives on the earth?"

"Not one," I replied.

"In a way, that is fortunate," said the Patrot. "While you are here you shall be clad as a Mernosian and shall have a Mernosian name. Your name, as long as you are with us, shall be Guros Jullo. Guros means visitor, and Jullo is our name for your earth. I have no doubt that you will prefer our advanced civilization to that of your earth and will become a permanent citizen. Filos, I leave Guros Jullo in your care. The Council is adjourned."

I left the Council Chamber with Filos, who was no other than the Mernosian who had discovered me on the sea shore, and he conducted me down the street to a tall building constructed of blue stone and very beautifully carved. We entered through the spacious opening and went over to an automatic elevator. Alongside the elevator was a shaft that ran clear through to the roof and opened there on the blue sky, or rather gray sky of Mernos. Filos pointed out the shaft.

"We always use that," he said. "The elevator is for freight purposes only, but as you are not yet equipped with a tube we will ascend by it."

Noiselessly the elevator took us to our floor and then Filos conducted me down the hall and ushered me into a beautiful suite of rooms.

"This suite is next to mine, and is yours as long as you live on Mernos," he said.

"But how about the rent?" I asked.

"Rent? Rent? Oh, I understand. There is no rent."

"Who pays for it?" I asked.

"No one."

"But I will have to find employment to pay for my living."

He laughed joyously.

"I forgot you came from the earth, where money is a necessity. Here you do not need money."

"Do not need money?"

"No. Whatever you want or need is furnished you by the government. No one abuses the power, however, for every mind is an open book."

"How is it paid for and what supports the government?"

"Everyone has his allotted task. There is very little arduous labor, as radio energy takes the place of electricity, and with it power is conveyed to machines that do marvelous things. About the hardest job is to watch the machinery and see that it is oiled every so often. Of course, in the machine shops there are tasks that require hard work, but they are filled by volunteers, who are relieved by others at frequent intervals. Those who do the hard work are rewarded by a term on the Council of Nine, which is the highest honor that can be conferred by a state, except the election to the Council of Thirteen. The member to the Council of Thirteen is picked from the Council of Nine, and is generally one who has done some special work."

"Then things are different than on the earth, where the hardest workers get the smallest pay!"

"The time will come, though it is still in the distant future, when the earth will attain the point we have reached. It is bound to come. With education comes higher thinking, and higher thinking brings more scientific deductions. But come, you are hungry."

I had to confess that I was.

"Come over here, then," he said. "Hold your mouth up close to this horn and press the fourth button on that board."

I did so, and immediately my nostrils were assailed by a most delicious odor.

"Inhale it," said Filos. I did so, and gradually the hunger was appeased.

"That is our method of feeding. Ages ago we did away with the mastication of food. Now, as you perceive, it is all taken into the system by inhalation. It took centuries of experiment to attain this perfection. But, of course, that does not mean we do not eat at times. For instance, there are fruits in the forests that we eat, though some of them are poisonous—"

"Then it was you who warned me in the forest, when I reached for that red fruit?"

"Yes. One taste of that fruit and you would have suffered agonies for an hour. That was the fruit of the Jomo, one of the two poisonous fruits on this planet. Now, if you will come here you will get your first lesson on this board. This first button is for music. The second button is for drama on that screen over there. The third is for the news of the day. The fourth you have already used. Now that you are familiar with your apartment, we will go to the tuberer and the clothier and get you a tube and clothes. Then you will look like a Mernosian, except for your beard. There is no law against wearing a beard here, so if you want to retain it as a distinguishing mark, you are free to do so. But if you want to have it permanently removed, however, it can be done in an absolutely painless manner."

We descended by the freight elevator, which I can not remember ever using again. Out on the street, Filos pointed to a Mernosian number on the building.

"Remember you live at 444 Filrom Street. In case you lose your way, you can ask to be directed. The streets are all named after ancient kings of Mernos, and the cross streets are all numbered from First Street up. The system here is similar to that of your earth."

"If there is no money, why all these shops?" I asked.

"They are not shops. They are merely exhibitions. You will find that these shops constitute a regular museum. Of course there are a few shops, such as the tuberer's and the clothier's shops and a few others, but in the main, they are to show ancient costumes and relics of the dead past."

I leaned up against a glass window to get a better view of some of the exhibits and sprang back with an exclamation. The glass gave like rubber! Filos laughed noiselessly.

"Our glass is flexible," he said. "It is unbreakable, consequently no one ever gets cut on broken glass. It can be cut with a knife. But, as we have no such thing as thieves here, the articles would be perfectly safe if openly exposed. The glass is only for protection against the weather, as it rains here at certain seasons of the year. To a certain extent, the rain is controlled by the Rain Board, but that is something we have not perfected yet. We finally hope to control the precipitation so that we can have it rain at will and where needed."

We finally reached the clothiers, and I picked out a suit of dark blue tights and a dark red doublet. The clothier approved my taste, and I was shown a little room, where I quickly made the change and emerged a Mernosian, in apparel at least. Then we went to the cappers, and I was fitted with one of the conical metal caps. I was shown a button, and by pressing it I had thoughts come to me from a distance. This was what the antennae were for.

Then we went to the tuberers, where I was given one of the tubes and the dependent plate which would enable me to go through the air as did the other Mernosians. Once out of the shop, Filos gave me the directions as to its manipulation.

"You press the button on the right. The left button is for a light if you are flying at night. When the left button is pressed, a soft light is diffused by the tube. Now, how do you feel?"

I felt as if all weight had left me, and so informed Filos.

"It has," was the astounding rejoinder. "Now think 'up' in the air."

I did so, and immediately began to rise. When I had risen to a considerable height, I began to wonder how I would quit going up. Filos read my thoughts.

"Whatever you think will happen while you are connected with the tube, as far as motion is concerned. If you want to remain stationary, think that way. You can attain any speed within reason by thinking that speed."

X

Facts

WHEN we had attained considerable height, we floated slowly back to our apartment. Into the doorway and up the shaft we went, and by that time all sense of strangeness had worn off and I was feeling a sense of exuberance at being able to navigate the air.

"How far up could I go?" I asked of Filos.

"As far as you could stand it. The temperature on this planet is identical with yours, and you might go up four or five miles without running short of breath. The difference between our atmosphere and yours lies in the fact, that here it is no colder ten miles above the surface than it is on the surface. The belt of vapor begins fifteen miles above the surface and it holds out the cold and keeps a great amount of the warmth in."

"This power in the tubes? How does it get to them and where is it generated?"

"The power is sent out by six different stations in this state, and is absorbed by the tubes. You will notice a pointed piece of white metal at each end of the tube. Those are the poles for the reception of this power, which we call Jorro. These stations are equidistant from each other and should one fail to function, there would still be power coming from one of the others to keep the tube bearers going, the lights lit and the trucks running."

"Where does this power come from?"

"From Lunidor, the sun. During the days of sunshine the essence is taken from the rays of the sun as they are filtered through the vapor layer. Enough surplus energy is stored, however, to allow for ten days of cloudy weather. But three days is the longest spell of cloudy weather thus far known on Mernos."

"The lights, everything, comes from the same energy?"

"Yes."

He pushed the "light" button and immediately the room was bathed in sunshine. A soft light that cast no shadows, seemed to come from everywhere, and yet from nowhere.

"How many languages are there on Mernos?" I asked.

"Spoken or written?" he grinned at me oddly.

"Spoken."

"None!"

"None? What do you mean by that?"

"Has anyone spoken to you while you were here?"

A great light dawned on me. We had used no language whatever. It had been thought transference and, consequently, no spoken language.

"I see! I see! But how many written languages have you?"

"Just one. What is known as the Borozian, from Borozia, where it was originated. Borozian has been the only language of the planet for nearly two thousand years. Before that there were numerous dialects and languages, which at times was confusing to travelers. By a decree of the Council of Thirteen, in 6542, year of Loro, one language was made universal, and on account of the predominance of the Borozian, it was chosen. The others soon faded away. However, books in all the languages are in the great public library here in Lorenda. But with each book in one of the older languages there is a translation in Borozian. I must take you to the library, for it contains books ten thousands of your years in age. But it is late in the afternoon and nearing night. You have had a strenuous day on Mernos, and so you should sleep. Sleep is still

a necessity to a certain extent among us, but we sometimes go days without it."

"Before you go, Filos, tell me this: doesn't it get monotonous at times on Mernos with the everlasting sameness?"

"It would, if it were not for the fact that we can send our minds at will to other planets. Then we have our games. We have adopted your American game of baseball as our national sport. We have found it to be one that requires quick thinking, and I would wager that one of the teams in our league could defeat any team you could make up on the earth, if it were possible to match them. Life is a pleasure here, and you will find it so. You will have to concentrate on sending your mind from your body. With our help and advice you can master it."

Filos left and I tumbled into the bed, which was the most comfortable one I have ever slept in. I slept like a log, and dreamlessly. I was awakened by Filos shaking me. He grinned as I rubbed my eyes.

"It is late, and I want to take you to the power-station. There is a bathroom over through that doorway."

The bathroom was much like the earthly bathrooms, equipped with hot and cold water, showers, tub, and all the appliances necessary. After I had bathed I felt a glow all over my body, and as soon as I located Filos I asked him about it.

"That is radium energy, or rather Jorro. All water going into baths is charged with it. It invigorates the body, and kills any fatigue that might be there."

I had almost forgotten to eat, but remembered it and went over to the food tube and soon had inhaled a wonderful breakfast.

"What will be my allotted work on Mernos if I stay?" I asked.

"As our guest from another planet you will be exempt from any duty."

"But that is hardly right," I objected.

"You were an astronomer on the earth, were you not?"

"Yes."

"Then if you insist on doing something, you can work in the National Astronomy Hall, where the younger generation are taught astronomy. We are so far ahead of your earth in astronomy, that you will practically have to go to school yourself. Our roving among the planets and suns has given us all the knowledge there is about the heavenly bodies. We know the largest sun, which is not Betelgeuse, as you state on earth, but Tolo, off at the edge of the universe, which is twice as large as Betelgeuse. We know almost all the inhabited planets of the universe. You must learn to read the written language so that you can study up and read of wonderful and weird peoples that inhabit other planets. You have seen the people of Mars, the once powerful brains that formerly dictated the policies of that planet, and you have met us of Mernos, who are the same as you in form. But I have no doubt that you will master mind-despatching, so that you, too will be able to roam through space."

"This is a real Utopia," I said.

"Almost as near to it as is possible. There can be no crime here, no deceit, no envy. The last crime was committed ages ago."

"I have already made up my mind as to going back to the earth." I observed.

"You will be glad that you decided to stay," said Filos casually.

"How did you know I had decided to stay?" I asked.

"What else could you decide? Here is peace and tranquility and on your earth crime, discord and the horrors of war. But let us go to the power station."

We went down the shaft and out into the air of Mernos. Up we floated and then to the east. Soon we were over enormous farms in the finest of order.

"These farms are for raising the food that is served you through the inhalation tube," said Filos. "Those forests that you see are for pleasure parks. They are filled with the only other kind of life there is on Mernos. There are sixty different specimens of birds, all wingless and voiceless except the Hodo, which flies and sings a plaintive note."

"Weren't there ever animals on Mernos?"

"Centuries ago the last wild animal was killed. There are no domestic animals; they too were disposed of. We do not eat anything but fruits and vegetables, so why keep useless animals?"

We went across the beautiful country for many miles. Only low hills here and there.

"Are there no mountains on Mernos?" I asked.

"Yes, but not in this state. Around on the other side, in the state of Pilaro, are mountains taller than any you have on the earth. Mount Alos is six and a half of your miles in the air. There are no volcanoes, nor have there been in the memory of Mernosians. Not even a volcanic crater has been found."

XI

Power

A HUGE building loomed ahead of us, about ten miles away. It was an enormous dome of prismatic appearance.

"Central power station number four," said Filos.

As we drew near to it I observed that it was indeed an enormous building, the dome towering six hundred feet or more into the air, and having a diameter of five hundred feet or more; at the largest part were prisms made of crystals that shimmered in the sun.

"That is what catches the rays of Lumidor," said Filos. "When we get inside, you will see something even more wonderful than the enormous globe."

We approached the building upon which the dome rested, and it was nearly seventy feet to where the dome started from. A large arched opening was inscribed with Mernosian letters, which Filos translated to me as literally meaning, "God gives all Power." Inside we were in a long hall that ran the length of the building, about seven hundred feet, and was filled with machinery, the like of which I had never seen. On all four sides of this square building ran these halls, each filled with its machines. We crossed the hall and entered the huge central room and I gave a

gasp of amazement and awe. Under the prismatic dome that developed every color of the rainbow, sat the most gigantic hand-made sphere that anyone had ever seen. It was of solid crystal and five hundred feet in diameter, and it towered nearly four hundred feet above the floor.

But another thing about the crystal commanded awe. The sunlight, as it was filtered through the prisms overhead, seemed to fall down over the gigantic crystal as water falls. Glowing with iridescence, wave after wave of the liquid sunlight flowed to the base of the globe and there caught in a trough that encircled the ball, ran into openings to a place below.

"Touch the ball," said Filos.

I could just reach it and I put the tip of one finger on it. Immediately the wave of liquid sunshine cascaded over my hand and gave me a feeling of enormous power.

"Don't hold your finger there too long, for it will eventually burn you," said Filos.

Hastily, I jerked my finger away and looked at it. A slight red spot was on the tip where I had touched the crystal.

"The ball reaches a hundred feet into the ground," said Filos. "Below that is an enormous pit lined with the greenish metal, which catches the energy as it pours down over the bowl. The machines that convert the rays into power are in a huge subterranean hall below. I will take you down there later."

"But how was that ball ever made?" I asked.

"It was made in sections and put together with a liquid cement that becomes transparent as soon as it hardens. The cutting of the parts was done with such nicety that it would almost take a microscope to see the places where it was joined. It is a kind of crystal that is found in profusion up near the northern pole of the planet."

"How long has the ball been here?"

"For two thousand years it has sat there. The machinery has been renewed at times but the crystal ball will endure until the end of time. On a cloudy day, when the sun's rays are not pouring over it, it glows with a faint luminosity, caused by the reflection of the energy in the pit beneath."

Then I looked beyond the sphere to the gigantic dome that covered it. Gossamer it looked, and I marvelled that so light a construction held so great a weight.

"The beams are made of Girro," said Filos in answer to my unspoken query. "It is a metal found here but not on your earth. It is tougher than your toughest steel and almost as light as aluminum. That dome has stood there for five hundred years. Not that the old dome weakened, but a different arrangement of the prisms was found that gave better results. It has now reached perfection, we think. The prisms are of the same material as the great ball, and are lighter than they look. Here is one here. Hold it."

I picked up the prism and found that it indeed was light, lighter than any similar material that I had ever seen. Then we went down the shaft into the machinery hall below. In the soft glow of sunshine sat machine

after machine spinning noiselessly, almost, in its tireless task. Just a gentle hum was all that I could hear, though Filos complained that he could not stand the terrible noise any length of time. The Mernosian ear had become so unaccustomed to sounds that the least murmur was as the cascading of a waterfall. I wandered through the maze of machines with Filos, lost in wonderment. I shall take neither the time nor the space to describe the machines here. If I establish communication with the earth I shall send a full description of the principles upon which they work, so that the earth may benefit.

But where they would get the crystal in such enormous quantities is beyond me, unless it is possible to make the crystal out of glass.

Then we went up to the main floor and there I found a few machines that had an almost familiar look. There were broadcasting machines of several types, some of which I could almost understand. One of the familiar ones was the news-broadcasting machine in the news-room. Here, in the middle of the room, was the broadcaster, its Mernosian operator did not speak into it however; he merely transferred his thoughts into it and they were carried far over the state. Around the room at little tables sat Mernosians with disks to their ears and a pen and paper before them. I looked inquiringly at Filos.

"They are the newsgeters, and each one is tuned in with a different sending station. As soon as a bit of news comes in, they write it on a piece of paper and one of the messengers takes it to the broadcaster. I will answer your thought by saying that were the newsgeters to convey it by thought there might be confusion. Afterwards all this news is printed in the evening papers for those who have missed the broadcasting."

In the play broadcasting room, plays were being acted for the broadcasting machine that sent the plays everywhere. This machine was beyond my comprehension. A play dealing with our earth was being made and I watched in admiration as familiar scenes were sent out upon the screen.

In the food broadcasting room huge vats of food were being cooked and the fumes gathered into enormous horns, thence to be broadcast all over the state. Each day a different menu was prepared.

XII

Wonders

"**N**OW that you have seen practically all that there is to see here, I will take you to inspect one of the airships and also the airship stations. We will have to go back to Lorenda for that."

Almost in a daze I followed Filos back to the city, and when we reached it, we went up to one of the enormous towers that was used as a landing for the freighters. A huge elevator ran up the center of the tower to carry the freight to and from the airship landing. These towers were all four hundred feet in height, about a hundred feet in diameter at the base and seventy feet at the top, with an overhanging plat-

form that was a hundred feet square. Filos told me the tower ran a hundred feet into the solid ground so that it was firmly anchored. The airships were two hundred feet long and the bow and stern projected far beyond the edges of the platform.

These ships of the air were made of the same greenish metal and had no wings. They had propellers at the sides and at the bow and stern. The ones at the sides exerted their pressure down and helped to keep the ship on an even keel.

"How do they run?" I asked.

"Come inside," invited Filos.

Once inside he took me to the engine or control room, after seeing the captain and getting his permission. The captain was deeply interested in me, when he learned that I was Guros Jullo, the man from the earth, as he had read about my arrival in the papers and had heard it announced over the radio. I had to answer several questions about my trip before he would let us proceed. As he had made several trips to the earth, he was interested only in the car that had carried me through space.

In the control room I saw a tube like the one I carried on my shoulders, though it was ten times as big. The propellers were run by little motors that had no apparent connection with anything. All kinds of instruments were seen.

"The car or ship can be closed airtight," said Filos. "Then it can go clear up into the vapor belt that renders us invisible. Several ships have reached a height of fifty miles, and one took a load of scientists, who tried to get samples of the vapor belt and analyze it. They got the samples but the vapor defied analyzing, so we are no farther along than we were five thousand years ago in knowing what that belt is. It is evidently an element unknown. There is no other planet that I know of that has the same vapor except Hurmos, in the solar system of the star you call Polaris."

"I thought I saw one of these ships coming from the west the morning you found me." I said.

"Probably you did. If so, it was coming from the island of Rinos, where it had been for the alloy we put with armor, the green metal to make the tubes for flying. In no other place on this planet is it found and the supply there will be exhausted in ten more years."

"What will you do then?"

"Bring it from Povnor, a satellite of Jupiter, where it abounds."

"But how will you do that?" I asked in amazement.

"We will build ships that will traverse space, which is not hard to do, as we have an alloy now that will destroy all gravitation. We will make a large ship, or several large ships, encase them with this metal and go by planetary attraction to any planet we wish. Slides on the car to expose the armor body beneath will be the controlling method. There are two of those machines in existence that have been to Povnor and have brought back a load of the dunor, as it is called. They came near being all killed on Povnor as the superstitious inhabitants thought they were demons."

"Then that is what the Patrot meant, when he said that a way was open for me to return to the earth."

"Exactly. And we will make such a car if you desire to return to the earth."

"I have overcome all desire for that. My only desire now is to stay on Mernos and to master mind-traveling."

"One is easily satisfied," grinned Filos, "but the other is a more difficult proposition. It rests with you, however."

I wandered through the big airship and saw that it was built for freight only. Of course no passengers would want to travel, for the tubes would take them where they wanted to go. Then we went down through the air to the ground again and back to my apartment, and once there Filos brought in some books and taught me the Mernosian characters. There were twenty-seven characters and as many sounds in the language.

XIII Mind Travel

I THEN got him to tell me what he could of traveling with the mind alone.

"Concentration is the secret of it all. It will take you a long time to master it, but I believe that you can do it. You have a powerful mind. Sit each day and think, think, think of sending your mind on a journey."

"But if I get my mind out of my body, can I return easily?"

"That is the easiest thing of all, for the mind always wants to return to the body. You will have difficulty in keeping the mind away from the body at first."

"Do the children have this power?"

"Once in a while an infant prodigy masters it at the age of around ten of our years, or twenty of yours, but very seldom. It is never mastered thoroughly until about sixty of your years in age."

I am not going to describe the time I spent in trying to separate my mind from my body. I had not succeeded at the end of six months and had about made up my mind to give it up, as apparently I was not far enough advanced to master it.

"Don't give up," said Filos, when I told him this. "It may come to you suddenly, when you least expect it."

I determined to try it one week more. It was the last day of the week I had set and suddenly I was looking down at my seated body in the chair! I had succeeded at last! Where should I go on my first journey? Back to the earth? Yes, that was what I would do. As I hovered there in indecision, Filos came into the room.

"Ah, he has succeeded at last. I knew he would," was his mental comment.

I stood, in the astral, upon the planet that I had left. All around me was desolation and devastation. Huge holes torn in the bosom of the earth and villages in ruin. Not a sign of life. What had happened? I fled the scene of desolation and then I saw the cause. I was upon a vast battlefield and the armies of Europe were tearing at their foes. It was in eastern France.

Upon one side waved the tricolor of France, the union jack of England and the yellow, red and black of Belgium. The flag of Russia with its blue cross

was also there. On the other side the flags of Austria and Germany floated side by side. I noted with pride that the fighting was on French soil and I thought that we were destined to win. But why say "we?" I was not a mundane being any more, I was a Mernosian.

Yet a feeling of sadness came over me as I watched the ghastly struggle. So many brave men were going to their deaths. For what? If only the peace of Mernos could be implanted upon this war-torn world. Yet there was one country at peace, and it was prosperous. In that country lay the salvation of the earth. That country was America, where the lowliest man had a chance to rise, where ability and not nobility ruled. I returned to Mernos and found Filos in the room. As I reanimated my body, he grinned in happiness.

"You have succeeded at last. I told you you would. Now it will be easier and easier until you can leave and return at will. Where did you go?"

"To Julio."

"And you found?"

"A world torn with wars. No peace on the eastern hemisphere."

"Nor will it be entirely confined to the eastern hemisphere, Guros. We of Mernos have followed the war as it progressed, and we can see the writing on the wall, as you on the earth would say. You will have to explain that saying to me some day, for I have heard of the 'handwriting on the wall' numerous times. The United States will be forced into the war, but on whose side I do not know. Whatever side she assists will win."

"What makes you think that?"

"Just the march of events."

"I do not feel as I thought I would. I thought that I would be filled with bitterness for the enemies of Germany and patriotism for the fatherland, but that thought has been submerged in the sorrow that such things should be. Oh that they could have a taste of the peace of Mernos."

"Already you are more Mernosian than Jullonian," smiled Filos, "and ere long you will, like us, look upon the people of the earth as beings groping in a benighted age. But they will make up after the war, and while this war will not be the last, yet the way will be paved for peace. Not until the big countries of the earth lay aside their greed and love of domination, will total peace come to your world. Kings and Dictators must go."

"But will this Utopia ever come to the earth?" I asked.

"As certainly as it has come to Mernos. But the years it will take may have to be counted by the thousands. Still, from what I know of the past history of Mernos, we were once as badly off as your earth now is. Once war after war devastated the planet. It culminated in the great war of all nations about five thousand years ago, then began to come peace and common sense. Then the ability to read minds came as a boon and no one could hide his guilt, if he had any. Thus died crime and envy and discord, and with it all such things, leaving friendship and brotherly love. Poverty died with the progress of the mind, and we

now stand, all millionaires, for we have all that we desire and no man hoards his pile to the detriment of his fellow man."

"Again I say, it is Utopian."

"Aye, and more."

"God grant that it may come to the earth and soon. But I will not live to see it."

"Not in the body, but in the spirit you will, or in another body, for the soul never dies."

"How fortunate I am to be here."

XIV

Roaming

AS the days fled by I became more and more expert in separating my mind from my body, and at last it was without an effort that I did so. I must say something of the things I saw on other planets and satellites before I close this message and send it to the world.

I even stood upon the sun and there I saw why it could shine with undiminished energy through billions of years and would do so for countless ages more. It is not a place of flames and fire; it is a ball of radium energy, with which the sun's rays are filled, thus giving life to the peoples and the vegetation of the far-off spheres. I sensed that the temperature of the sun was the intense cold of space and as I stood there, the rays of energy crossed and recrossed above my head, shooting out into the blackness for thousands upon thousands of miles. The sunspots were merely places where a deposit of some kind, impervious to the rays, held them down.

I exulted as I thought that I was the first of the earth people to get the real solution of the mystery of the sun and I must tell it here so that it will be a mystery no more. But will I be believed? I am afraid not, though a man of science should know it must be true, for otherwise the sun would have been burned out ages ago and very few suns burn out.

Jupiter, the immense! I hung above the planet and looked down upon a gaseous planet that was in the process of formation. Here and there the bank of vapors would break and I would get a glimpse of the semi-molten surface of the giant planet. At times it would boil and bubble and then it would seem to be almost solid. Many ages would have to pass before this planet became habitable. There were nine moons around this great planet and I explored them all. To my astonishment I found that one, two-thirds the size of Mars, was inhabited. But such inhabitants! They were about five feet tall, with the bodies of lizards and the heads of frogs! Their attenuated legs were three feet long, ending in a frog-like foot. The heads, while like a frog's, differed in that their eyes were mere slits, and upon their heads was a coarse reddish hair. The arms were so long that they almost touched the ground and ended in six-fingered hands with double-jointed fingers. They breathed through the mouth, which was always open.

In mentality they were like the cave dwellers of the earth of ages ago. They spoke in a queer piping

voice and their thoughts were simple and easily read. Clothing was not a part of their equipment and the women had longer hair on their heads than the men did. They called Jupiter, which filled about a fourth of their visible sky, Muzit, and it was supposed to be where they went when they died. I have since decided that this was the Jupiterian moon known to earth astronomers as Ganymede, and by the inhabitants, Zitzo. Our sun was sometimes seen as a bright, bright star, dimmed by the overpowering brightness of Jupiter. They lived in mud huts in which they had enormous fireplaces and an abnormal lot of filth.

I visited all of the planets of our solar system. On Saturn's moons I found the peoples to be our kind but dressing and living as in the time of Julius Caesar. I went to the uttermost ends of our own universe, out past the last huge sun and its attendant planets.

"Filos, it is wonderful," I remarked to that person, one day.

"Yet it has ceased to seem that way to us. We take it as a matter of course. Countless trips through space have taken off the glamor. It is true that it never gets monotonous, for there are millions of different planets to visit, but it is done so easily that we have lost all idea of its being marvelous."

"I don't think I will cease to think it marvelous," I said.

"Yes, you will. The time will come when you, too, will consider it commonplace."

"Are there any other planets as far advanced as Mernos?"

"Many, and one that seems to be even farther advanced. That one is far off Opar, a planet of one of the gigantic suns that hover in outer space. Near to the end of the universe it is, so near that at certain times of its year the night sky is almost devoid of stars. But two or three are further away than Opar. We call that sun Onaro, but it can not be seen from here, nor from your earth. There the people are as happy as we are, as peaceful and contented, but they have advanced one step further. They can not only project the mind to another world; they can usurp the body of a dweller in another planet. We know that, for one of them did it here. That is how we learned about Opar."

"I shall go to Opar."

"It will be well worth your while. Opar is, like Mernos, ruled as one big country by a Council of Sixteen. They use the power of their sun as we do, and in Kirol they have a crystal ball one-third larger than the one you saw. But their crystal is hewn from the solid substance, instead of having been built up like ours."

I WAS in Opar! Opar the magnificent. It was at night, but instead of the starry sky I was wont to see, only three stars were in sight and the moon of Opar. But to describe that moon! Not a yellowish, golden sphere as is our moon, but a thing of still greater beauty. A bright bluish green, it cast a soft glow over the landscape that lay before me, bringing into relief the gossamery buildings that comprised the

beautiful city in which I stood. Bigger than our moon by a third and moving majestically across the heavens with a speed that almost made her motion visible, it was a glorious sight. Long I stood and reveled in the beauty of the satellite ere I turned my attention to the city in which I stood. Then I looked around me. Shimmering in the soft light were tall buildings that seemed to have an iridescence of their own.

They towered in the air majestically, large at the base and gradually worked in, something on the order of a pyramid. There was a uniformity about them, and none were unsightly. Nor were there any low buildings; all rose to an average height of at least three hundred feet. The moon's rays were reflected back from the pavements in iridescent splendour, for the pavements seemed to be made of a material with a sheen to it. Late as it seemed to be, the streets were not devoid of people. Here and there Oparians were coming and going, and I examined them closely. They were like the people of the earth except that the cars were very small, almost gone. They were about as delicate featured as the Mernosians.

In the glow of the speeding moon I wandered through the magnificent city that was about twice as large as Lorenda and viewed many a magnificent park and lake. Here and there, in large squares, were pieces of statuary that would put most of the statuary of the earth to shame. Some of the groups were apparently allegorical and some statues seemed to be of famous Oparians; naught however, that would bring to mind warfare or strife. Those things had ceased to be for so long that they were not even commemorated by a statue.

Like Mernos, only beauty and peace and calmness reigned. Yet I could not see that this planet was any further along than Mernos, except for the fact that they had learned to usurp a body upon another planet. Undoubtedly this would be accomplished on Mernos also. When the giant sun Onaro cast its rays upon the now sleeping city, I returned to Mernos.

XV

Message

I WENT to Filos not long after this and was about to speak about the feasibility of getting into communication with the earth, when he got ahead of me to say that the Council of Nine requested my presence as soon as it was convenient for me to attend. I wondered what it was for, and began to try to remember if I had in any way violated any of the laws of Mernos. We found the Council in session, as I told Filos that I was ready to go at once. The Patrot addressed me as I stood before them:

"Guros Jullo, you have been on this planet for close to one of your years and we called you before us to ascertain if you wished to stay or wished us to give you assistance to get back to the planet that you left. The choice lies with you, and should you decide in favor of your home planet, we will give you every assistance in our power.

"We invite you to stay among us to the end of your days, but the desires of your own heart come first."

"Worthy Patrot and members of the Council of Nine, my mind has been made up for many days. I have no desire to go back to the place of warfare and strife and envy and discord from whence I came. I will stay on Mernos, if it pleases you."

"It is well. Now there is a chance for you to get a message to the people of the earth. Mind communication seems to be impossible. The only communication that seems possible now is one by which a written message will be given them. I think it can be done. In the great museum at Dovenla is an instrument that was once used to shoot messages to Mars in a vain attempt to communicate with that body. This was before mind transference had become an accomplished fact. We knew that the messages reached Mars but none were ever found. Now we can use that instrument to send a message to the earth. Tell us your message, or better still, you can write it and we will have it copied nine times by our special process. This will give you ten messages. At least one of them should be found."

"Thank you, I will write my message at once, and yet I feel that if it is found, it will be received with skepticism and doubt."

"It will probably be so, but some may believe."

We left the Council Chamber and went to my apartment where there was writing material in profusion, but Filos objected to my using any of the paper that was there and he produced some very thin but exceedingly tough sheets and a special ink.

"This ink and paper will stand being heated in incandescence without being harmed. Thus, if the cylinder you are to send gets overheated in the atmosphere of the earth, and it surely will, no harm will be done to the contents. Besides, it will be enclosed in a case of Ludo, which is like your glass, but flexible. You have seen it in the show windows."

"What will the tube be made of?"

"A special alloy that will not melt at less than 1500° of your temperature you call Fahrenheit. Now you can write your message and I will have it copied not only nine times, but more. One copy with a translation will go to the great library of Lorenda, to be placed in the archives there. We will shoot ten copies to the earth and if one of them is not found, we will shoot ten more. Constant shooting may at last place one where it will be discovered."

So I am writing this message to the earth to be copied many times. The messages are all the same, except for the opening sentence, which tell the order in which the cylinders are sent out. It took me a long time to write this message, for I am not a writer. There may be some slight discrepancies in the tale, but they are easily explained. I will make daily trips to the earth, as the tubes are shot forth and watch for publication of the fact that a tube has been found.

Finder of this tube, will you not see that publication of the fact is made in the Berlin *Staats-Zeitung*? I shall scan the copies of that paper each day for information. Let the news of the finding be upon the first page of that paper, where it can be easily seen. I

(Continued on page 1042)

PHAGOCYTES

By A. H. Johnson



My world is far different from yours. A hundred years ago my story would have been utterly unintelligible to you. But your science has made such strides that today much of my story will be entirely clear to all. There are still many things, however, that the scientists of your outer world do not know. Perhaps my story may shed light on some of these things.

My earliest recollections are of ceaseless movement. I floated in a fast moving current through a series of passages or tunnels. The fluid in which I floated held many other beings besides myself. We were all of shapes and of contours that would amaze you of the outer world.

The size of the passages varied continually. The very smallest were too small for me to enter while a great number were only a little larger than myself. From these smaller ones they ranged to a size so large that many hundreds of beings like myself could move through them at once. In the smaller corridors, the flow of the stream was slow but in the larger ones it was very rapid. And in four of the largest tunnels, it boiled with terrific speed.

These passages had a number of inhabitants. Most of them floated free in the stream but a few lived around the edges of the tunnels. I belonged to what I will call the White Race. Few or none of the other animals were as large as we. Our bodies were oval or round in shape and somewhat flat on the upper and lower sides giving us a disk-like appearance. The fluid in which we lived completely filled the tunnels and we lived in it somewhat

as the fish of your world live in the sea. We had a number of very small and thin arms or limbs and by means of these we swam in the stream. We could neither speak nor hear but by means of a sense, which you do not have, we were able to communicate with one another. For the sake of making my history clear to you, I will refer to our

means of communication as speech. We were not the most numerous species in our world. The Red Race outnumbered us hundreds to one. They resembled us in appearance, except that they were even more disk-like and they were only from two-thirds to one-half as large as we. Also, while we were white in color; they were a brilliant red.

In addition to the Red Race and ourselves, there were numerous other species. Most of these other animals were hostile to us and to the Red Race and it was our duty to see that they did not become numerous.

They varied in size from one-sixth the size of the Red Race to a few species slightly larger than the Reds. Some were spherical in shape, others resembled a curved, twisted or straight cylinder. Most of them had tentacles or arms which enabled them to swim. Under normal conditions, these smaller animals formed only one-half of one per cent or less of the inhabitants of the tunnels. Some of them were entirely harmless but many were very ferocious and attacked the Red Race savagely. The Red Race could not fight, it was their duty to keep the tunnels in good condition and carry food to certain animals that lived around the smaller tunnels. They also removed certain waste products from the stream, keeping it pure. It was our duty to protect the Red Race, for we knew that if enough of them were killed, the impurities in the stream would increase and we would be unable to live. Thus our two races were mutually dependent. Neither could exist without the other.

I did not know all this at first. My memory of my earlier days only contains a record of passively floating through the passages and absorbing food from the surrounding stream. But gradually I grew in size and became more active. Also my knowledge increased. I began to learn my way about some of the larger passages. The smaller passages were so numerous that I despaired of ever knowing one ten-thousandth of them, but they were not so important to be known as were the larger passages, for the current was so swift in the larger passages, that it was impossible to swim against it. And one could only control one's destination

by choosing the branch passages to go into. The current swept in a great circle through the tunnels. It went from the larger tunnels to the smaller and then through the smallest, and these small tunnels were innumerable in quantity; then it went into larger ones and then through the largest and then through the smaller again and so on around the circle. But the

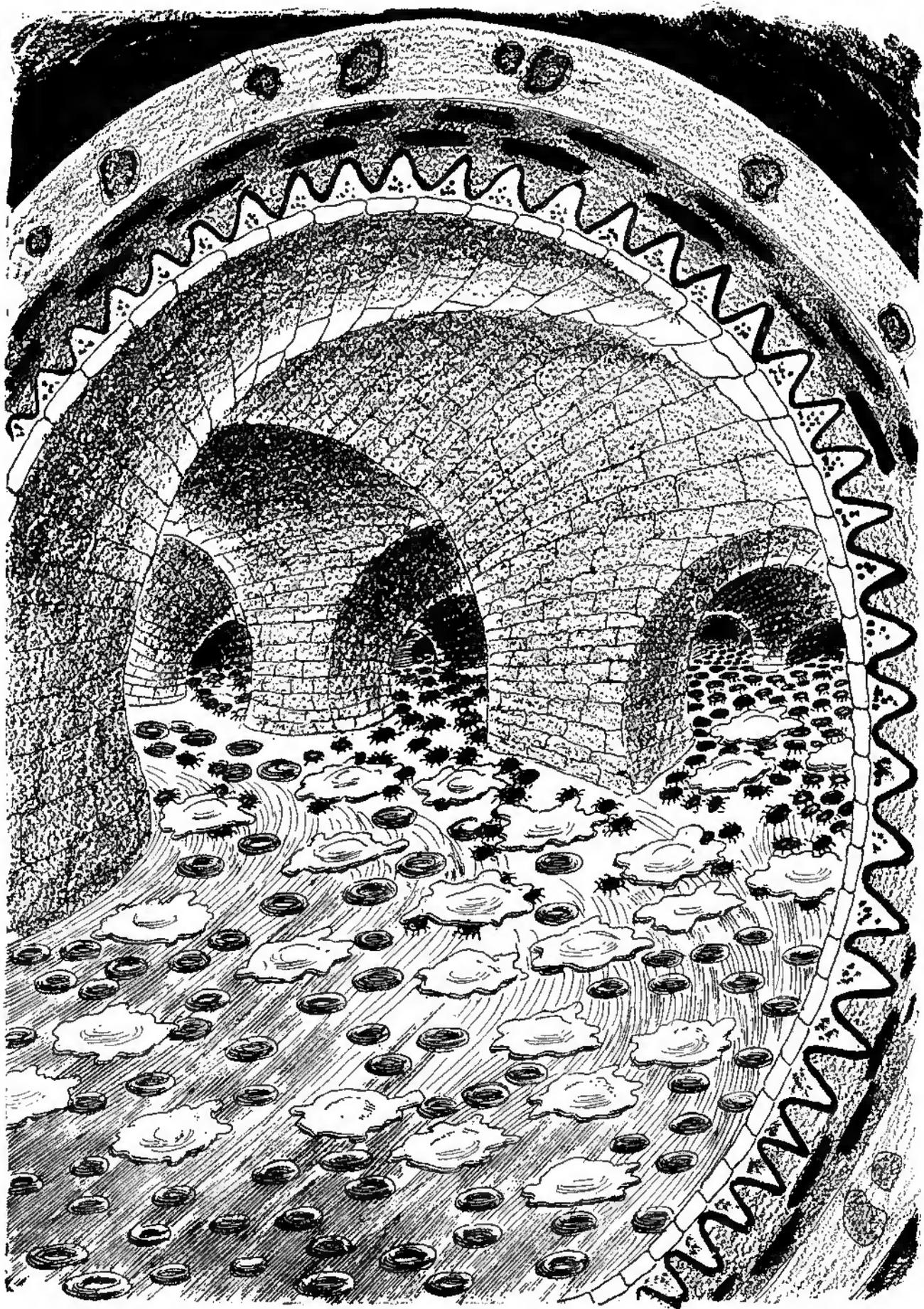
length of the circuit varied greatly, according to the passages one took. Some of these passages were so long and circuitous, that it was possible to make only a few circuits through them in a life time. Others were very short.

Before I reached my full growth I learned how to attack our enemies, whom we called Ancytes. All of our race were great fighters; we had no other duties or pastimes than fighting; and we thought nothing of tackling three or four of the largest species of Ancytes or a dozen of the smaller species. Of our manner of

It is usually the things nearest to us that we know least about. Humanity lived for thousands of years, until finally, only a short term of years ago, the scientist, William Harvey, discovered that there was such a thing as blood circulation.

The present story is really not a romance, because practically 99 per cent of the story is fact. Maybe the present story will be the forerunner of others, to show us what is going on in that great mysterious machine called "The Human Body."

Here, no doubt, is an unusual story that caps the climax.



The Nars were pushed back some distance into the Labyrinth. But they soon rallied and returned to the attack. The stream was filled with bits of bodies. And the Red Race had been almost exterminated in these places. Their absence meant that the stream was becoming impure. This was worse for us than for the Nars, for the stream flowed from them to us.

fighting you shall learn later, when I describe the Great Invasion. Since we were so superior to the Ancytes in fighting, you may wonder how we could ever be in danger from them. But as a matter of fact we were always in danger. And ceaseless vigilance and activity were necessary to preserve our existence. Our danger was due to the great powers of multiplication possessed by the Ancytes. If only a small group of them were allowed to breed undisturbed in some remote passageway, they would in a short time emerge in immense multitudes. And we knew that if we were sufficiently outnumbered we would be unable to cope with them.

So we scattered ourselves far and wide through the passages and tried to keep every smallest alcove under watch. Whenever any of the Ancytes were discovered, we either hunted them down and destroyed them by ourselves, or, if they were too numerous, we signaled to as many of our comrades as necessary to join in the hunt.

Exactly where the Ancytes came from we did not know. It was from somewhere in the great outside. They either obtained entrance through breaks in the wall of the passages or through places where the walls were very thin in the smaller passages. They practically always appeared in the smaller tunnels. There were two sets of passages where they were particularly likely to appear. We kept strict watch over both of these and as they were far removed from each other, we kept a good force near each.

The worst of these two sets of passages was almost boundless in extent and we called it the Black Labyrinth because of the endless tunnels it contained and because the Ancytes that appeared in it were usually dark in color. The other we called Narrow Places because of the small size of the passages.

I HAD attained full growth and considerable knowledge and experience when the dark day of our race dawned. I was floating quietly near one of the entrances to the Black Labyrinth, when the word came that the Bors, one of the most active, but smaller species of Ancytes, had appeared in considerable numbers in the Narrow Places. I knew at once that the situation must be serious or even the news of such an event would not have reached us. For, if the number of White soldiers near the Narrow Places had been sufficient to deal with the situation, they would never have said anything about it.

I, and a number of other White warriors, moved toward the larger passages, where the current would carry us toward the Narrow Places. The Dark Labyrinth and the Narrow Places were almost at opposite ends of the passages and it was a long journey from one to the other. The circular motion of the current made it possible to choose such passages, as always to have the current in one's favor in moving from one place to the other. Were it not for this fact, a considerable portion of a lifetime would have been expended in such a journey.

We moved from the smaller passages into the larger, where the current moved very swiftly. In the largest of the passages, the current boiled and foamed with

speed and we did not attempt swimming. All our efforts were expended in preventing ourselves from either bumping into the wall or into each other. The larger tunnels were so big that as long as one did not attempt to move off into branch passages, there was little danger of bumping into the walls. But we frequently had to make turns, and if one were thrown against the walls at this speed, it meant serious injury or death.

As we approached the smaller passages near the Narrow Places, the current slowed down, and we were again able to swim. We moved slowly forward, for we knew we would receive word if there was any very pressing need of assistance. We considered the Bors very troublesome but not very dangerous. They were too small to constitute a real threat against us unless in such numbers as to literally block the passages with their bodies.

We began to notice signs of them as we approached the Narrow Places. These signs were small bits of members of the Red Race who had been devoured by the Bors. The Red Race could not desert these passages without allowing the stream to become so filled with impurities as to prevent our living in it. And they stuck nobly to their work in the face of this danger.

Before entering the Narrow Places we decided to make use of the fact that although the passages through the Narrow Places were innumerable, the entrances were few. Thus the stream entered the Narrow Places rather as a stream in your world might enter a marsh and flow through the marsh in innumerable small streams to combine into one again. We posted guards at the entrances in order to confine the Bors to this section of the passages. Then we slowly advanced upon them.

We found that the White soldiers already present were winning even without our aid. The Bors had been pressed back into the smallest of the passages and were being slowly run down and exterminated. The litter in the stream showed, however, that a considerable fight was taking place. Thousands of the Red Race had been destroyed and the stream was thick with small pieces of the Bors. We saw no White dead. Many of the White soldiers had, however, temporarily withdrawn from the battle to digest such of our enemies as they had seized. We fight by grasping our enemies with our tentacles and eating them. We do not eat as you eat with a particular section of the body. We can eat with our whole body, and we curl around and envelope whatever we eat. Whenever we have enveloped all we can digest, we withdraw to digest it and then return to the fight. We could not afford to do as you do in attacking an enemy, that is merely injure him enough to kill, for the bodies would soon litter the passages so as to hamper movement. Also the bodies of the Ancytes, if left exposed to the stream, produce a mixture that is poisonous to us. We must not only kill but also destroy the body.

WE divided into small groups in order to search the innumerable small passages. I and three other

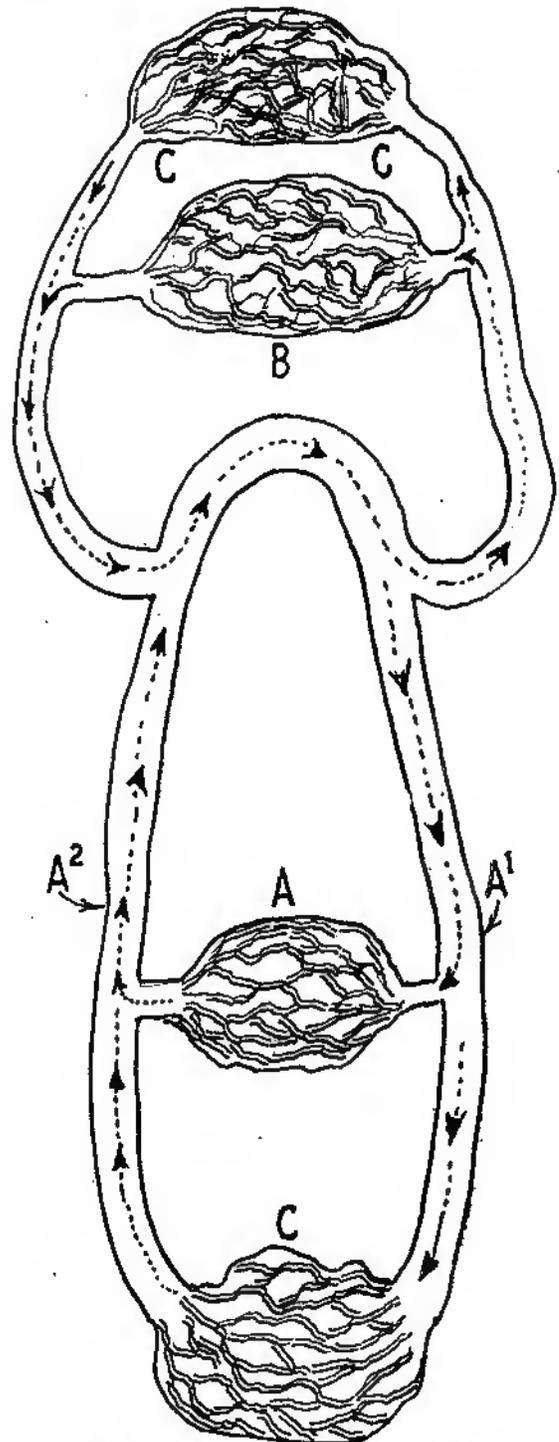
of our race were moving slowly along a small passage when far in front we saw several Bors. Instantly we dashed forward with the Bors fleeing before us. We pursued them through many winding tunnels until at last we knew we were approaching the further edge of the Narrow Places. We knew then that we had them cornered, for the entrances to both sides of the Narrow Places were held by our men. The Bors knew it too and seeing our small numbers, they turned in a savage effort to break through us and double back on their path. There were perhaps twenty of them.

The passage here was only wide enough for two of us to stand abreast, so I and the largest of the other three of our men stood in front and the other two just behind us. The Bors were only about one-sixth of our size and bulk, but they were equipped with sharp teeth as well as the tentacles we had. They were shaped like a short squat rod with a knot on one end. This knot was their head and contained their teeth. They swam forward in a mass and attacked savagely. I seized three at once and began to envelope and kill them. I could feel their sharp teeth tearing at me and even biting off small pieces, but I come of a hardy race, and in order to kill me, it would have been necessary to tear me entirely apart. My comrade had seized four of the Bors and was handling them easily. I grabbed two more and the end of this group of the enemy seemed well in sight, for we had not yet called on the two soldiers we had in reserve. But at this time we heard a noise in the passage behind us and saw some thirty of the Bors coming rapidly towards us. They were evidently pursued by another group of our soldiers.

This meant that we were caught between two fires. The Bors behind us would fight desperately, believing that if they could break through us, they could escape. There was only one thing to do and that was to attack the Bors in front and either annihilate them, or force them to retreat to the entrance of the Narrow Places, where the guards would annihilate them and come to our assistance.

We charged at once and the Bors were forced back a short distance. But they understood the situation and did not retreat far. There were only eleven of them now but my comrade was rather badly torn and I was somewhat tired. We each seized two of them and then retired a little to let our two fresh soldiers attack. They accounted for four more but while they did so the Bors from behind reached us. Eight of them seized my wounded comrade and literally tore him into small pieces. Only twelve of them could come abreast, so only four were left to attack me. I grasped two and on my friends seeing the situation, one of them came to my assistance, leaving the other to finish the remaining three Bors between us and the entrance to the Narrow Places. The situation seemed desperate, when I saw a line of White warriors sweeping down on the rear of the twenty-eight Bors behind us. Now it was they that were held in a trap and the slaughter was sudden and complete. The White warriors charged into the Bors with the impunity and deadly effect of tanks among infantry. Not one of the Bors escaped.

Scenes like these were taking place all through the



ARROWS INDICATE DIRECTION OF CURRENT¹
 A-DARK LABYRINTH
 A¹-NEAR ENTRANCES (TO LABYRINTH)
 A²-FAR ENTRANCES
 B-NARROW PLACES
 C-C-PLACES WHERE THE PASSAGES ARE SMALL
 AND NUMEROUS. DOTTED LINE INDICATES ROUTE
 TAKEN BY WHITE WARRIORS FROM NARROW PLACES
 TO LABYRINTH.

Narrow Places and continued to take place for over one life-span of the Bors. We have no measurements of time similar to your days and years. Our environment never changes to correspond to your days and nights or seasons. If it did, we would probably die. Our only measurement of time is the duration of our lives and those of the animals about us. We live about twenty times as long as the Bors. Thus this war with them took about three of your years.

MOST of the fighting was done in the first part of the war and the latter part was more a mere hunt. But the passages were so numerous, that almost our entire force was required to search them thoroughly. We could not divide into groups of less than five or six for fear of coming on some such situation as we had encountered in the first part of the war. We were determined to do the work thoroughly and in order to do so, withdrew our patrols from the Black Labyrinth which had been unusually quiet during the Bors War. The only precaution we took with regard to the Black Labyrinth was to leave strong guards at all entrances. We were to regret this negligence sadly later.

We finished the war in excellent shape. We lost less than a hundred soldiers and most of these were killed in circumstances similar to those in which the warrior with me had been killed. With this small loss, we had completely exterminated the Bors. It was true that many thousands of the Red Race had been killed, but they were so numerous that the losses could hardly be noticed. Also they were a prolific race and their natural increase soon filled the gaps.

We had hardly finished the Bors War however, when the Red Race brought the most dire news. Their work had carried them through the Black Labyrinth and they reported that the most dreaded of the Ancytes, the Nars, were present there in great numbers. The Nars were fully twice the size of the Bors and much more savage and active. In addition, they had a weapon not possessed by the Bors. They could throw off from their bodies a poison which, if present in the stream in sufficient quantities, would first paralyze and then kill us. It was also deadly to the Red Race.

Leaving only a small contingent to guard the Narrow Places, the rest of our soldiers headed at once for the channels where the current flowed toward the Dark Labyrinth. We had hardly started before we received further and worse news.

The Nars had attacked the guards at both entrances of the Dark Labyrinth and they were so numerous that it was feared that their attack would succeed. They were attacking the guards at the Far Entrances with particular fury.

This meant a very grave situation for us, for it would be long before help could reach the guards at the Far Entrances. The course of the stream was from the set of entrances of the Narrow Places, where we now were, toward the Near Entrances of the Dark Labyrinth, then through the Dark Labyrinth and out the Far Entrances and so around to the other entrances to the Narrow Places. Thus in order to reach the Far Entrances to the Dark Labyrinth, it would be necessary either to go through the Dark Labyrinth, which was swarming with Nars, or to swim against the current and go back by the same route through which we had come to the Narrow Places, or, and this was the only route that left any hope of reaching the Far Entrances in time to be of any use, to follow the current on past the Near Entrances of the Dark Labyrinth and on beyond the Labyrinth where it curved around in a great half circle and finally came back by the

Far Entrances. By following this route, we would have the current with us all the way, but it was so extremely long that we doubted if we could arrive in time.

Still, since this was our only chance, we determined to take it. A third of our force composed of the ablest fighters and fastest swimmers was sent to follow this route. The rest followed in a more leisurely manner. They were to attack the Nars from the Near Entrances of the Labyrinth.

I FORMED part of the advance force. We swam rapidly forward hunting for the channels where the current moved with terrible speed. We did not merely float with it but aided our progress by swimming. The turns were taken at a desperate pace and several of our number were crushed at almost every turn. But we did not hesitate, for we knew that if the Nars broke past the guard at the Far Entrances, they would spread through the whole stream and we would never be able to beat them. The stream whirled and seethed around us, but we still continued our mad pace. Then we were moving through the smaller and slower passages and were more than halfway to the Near Entrances. Next we approached the Near Entrances. We saw no sign of the struggle that must be going on, for the current flowed away from us and carried such signs toward the Far Entrances.

Then we shot past the Near Entrances. In a brief glimpse we saw hundreds of our warriors grouped near them. We later learned that the attack on them had merely been strong enough to prevent them from sending aid to the guards at the other gates.

The passages that go beyond and around the Dark Labyrinth are small and we had little benefit from the current in moving through them. We went at the top of our speed. We must reach the Far Entrances while our guards still held them or our Race was doomed. The Red workers who were drifting through the passages were glad to see our warriors and told us that the guards at the Near Entrances were standing firm, but they had no news from the Far Entrances.

On we swept. Three-fourths of our journey was done. The passages were again becoming larger and the current added to our speed. Our warriors were spread out in a straggling line with the fastest swimmers in front. The slower swimmers were thoroughly exhausted and a stop was determined upon to allow them to rest before attacking the Nars. But a fourth of our group, composed of the fastest swimmers, decided to proceed without a pause.

I formed part of this group. Leaving the rest of our party, we moved on. Soon we were approaching the Far Entrances. We made a momentary pause to reorganize just before turning the last curve before reaching the Far Entrances. Then we rushed on.

As we turned the curve, a terrible sight met our eyes. We had left over a thousand of our best warriors to guard these entrances. Now we saw perhaps a hundred and fifty badly torn and wounded White warriors slowly giving way before a swarm of Nars. The passage into the Black Labyrinth was very large. It was big enough

to allow two hundred of our soldiers to stand abreast. Our hundred and fifty warriors were a short distance down this passage and slowly retreating towards us. The Nars are egg-shaped with numerous arms or legs looking somewhat like an egg with a ragged fringe around it. The fringe is composed of their legs or tentacles. The Nars have powerful teeth and jaws and they were using them against our soldiers with deadly effect. The stream was filled with bits of the Red Race and pieces of our soldiers and of the Nars. It was apparent that our soldiers were practically beaten. But they still held the entrance!

We dashed into the fight at once. And at first we were uniformly successful. The Nars were pushed back some distance into the Labyrinth. But they soon rallied and returned to the attack. The stream was filled with bits of bodies. And the Red Race had been almost exterminated in these places. Their absence meant that the stream was becoming impure. This was worse for us than for the Nars, for the stream flowed from them to us.

Then the Nars began to use their poisonous emissions. Many of our white warriors were partially paralyzed and some killed. We were forced to draw back to the outer edges of the entrances, so that the pure stream which flowed around the Dark Labyrinth would wash away the poisons.

The Nars seeing only a short distance between them and the open stream, attacked with renewed ferocity. We were entirely outnumbered. We had some 2,000 warriors already at the Far Entrances and 8,000 more were due to arrive. But the Nars were numberless. And as fast as we killed off the front ranks, others replaced them.

This could not go on long. When one of our warriors was attacked by ten or more of the Nars, his fate was sealed at once. Our front rank was melting away. We could not retreat, for to do so would turn the Nars loose in the stream. So our soldiers died where they stood. Half of them had been killed and many more partially or wholly disabled by the Nars, poisons when our main force came up. They at once took over the battle while we received a brief rest.

We soon saw that even these numbers would be insufficient to hold back the Nars for more than a short time. Where was the rest of our force? Why were they not attacking the Near Entrances and sweeping through the Labyrinth to fall on the rear of the Nars that attacked us? Unless they completed some such maneuver speedily we would be finished. We would not retreat while we lived, but there would come a time and that time was not far off when there would be none of us alive.

We were ordered back into the battle. I was in the fifth rank and so far entirely unhurt.

I watched the Nars sweep against the first rank in a raging mass. The line seemed to dissolve under their attack. The second rank moved forward through the floating pieces of bodies to take their place. The stream was becoming even more filled with bits of our warriors and pieces of the Nars. As I have told you, we

not only killed the Nars but destroyed their bodies by eating them. But when one of our warriors who had seized several of the Nars was torn in pieces, the bits of the Nars were turned loose in the stream.

NEXT the second rank was destroyed and the third moved up to take its place. Our warriors seized and enveloped thousands of the Nars but still they came on in apparently undiminished numbers. For every one of our soldiers killed, five or six of the Nars must have died. But still the Nars came on.

Soon I was in next to the front rank, and then we moved up to the front itself. I was at the very end of the line with the passage wall on my left and this fact gave me some protection. I seized two of them.

Only four thousand of our warriors were left now and many of these were both wounded and gorged with the bodies of the Nars. This gorged condition made our soldiers inactive. The Nars, for some reason, ceased pressing the attack for a short time. We afterwards found that they were holding a council.

Then they came forward with renewed energy and in even greater numbers. The rest had done our warriors good and we met them with greater ferocity than their own. Our front rank charged them savagely and pushed them far back into the Labyrinth.

But this proved our undoing. For our front rank went past several side-passages and the Nars came out of these side passages and attacked them in the rear. Not one of them came back.

The Nars, encouraged by their destruction of our front rank, attacked with increased vigor. We knew that we could not hold out much longer.

But at last the longed-for event happened. We heard the sound of fighting far back in the Labyrinth. It could mean but one thing. Our troops had fought their way through the Labyrinth and would soon arrive to support us. The Nars were caught between us and were in a trap. But would the walls of the trap hold?

The Nars realized the situation and attacked with a wild and desperate abandon that made their previous efforts seem tame. No longer did they spar for openings with our warriors, somewhat as a wolf attacks an elk in your world. Now they rushed right in, knowing that the first three or four would be killed. Under such tactics, our soldiers melted away like snow before the sun. Soon there were only six hundred of us left. We stood in three ranks. It seemed to be almost over.

But in spending their energy in attacking us, the Nars had left their rear almost unguarded and our main force composed of some twenty thousand soldiers was sweeping them before them. Fully three-fourths of the Nars turned to hold off this force, while the rest were to finish us. But the rest were insufficient to finish us. We held our own. The Nars were finished!

They broke before the attack of our main body and fled down various side passages. Then two thousand of our warriors forced their way through and reinforced us. After that we hunted them down, as we had hunted the Bors.

We had won!

The DEATH of the MOON

By Alexander Phillips

*"Slowly the Bible of the race is writ,
And not on paper leaves nor leaves of stone;
Each age, each kindred, adds a verse to it,
Texts of despair or hope, of joy or moan."*
—Lowell.



GRASSY, treeless plain, for the most part smooth and level, swept off to the far horizon. Across its surface a few small bodies of water were scattered, quiet and motionless in the drowsy sunlight. Northward, a cliff rose abruptly from the peaceful level of the surrounding country trailing off on either side out of sight. It appeared to consist of some hard rock such as granite and was much worn by water, its surface being studded with the mouths of caves and small, queerly carved out-thrustings of its strata. Upon the summit of the cliff grew a lush and semi-tropical vegetation in direct contrast to the plain. This plant-life consisted of a brilliantly colored undergrowth and tall, peculiar looking trees, all of which followed the trend of the cliff and vanished in the distance. Over this quiet and peaceful scene the mellow and hazy sun beamed, while primitive-looking insects droned and hummed in the undergrowth of plain and cliff alike. Suddenly the quiet was broken by a scream of fearful agony. At the edge of one of the lakes a horrible bony-scaled, fish-like creature with blank, expressionless eyes, had seized upon an over-sized amphibian and was mechanically chewing him in half. The fish dragged its victim below the surface and the screaming ceased. The scene was not as peaceful as it appeared. Long before this the unending cycle had begun.

Such was the greater part of the continent of North America five million years ago when Time was nearing what is known as the end of the Cretaceous period and preparing the world for the advent of the domination of mammals. At that era of formation the great American continent was being constantly flooded over vast areas by a shallow, half warm sea which was just as constantly drained off again. The withdrawal of the sea left great expanses of treeless plains with here and there, on ground which had not been submerged, large forests of the weird vegetation of that period. There was also animal life; with the intruding seas came the marine life and the amphibian giants, who had ages before lost their world dominance and had not yet come to their final extinction; with the rising of the land and

the draining off of the waters came the land animals, the kings of the earth, following their environment always.

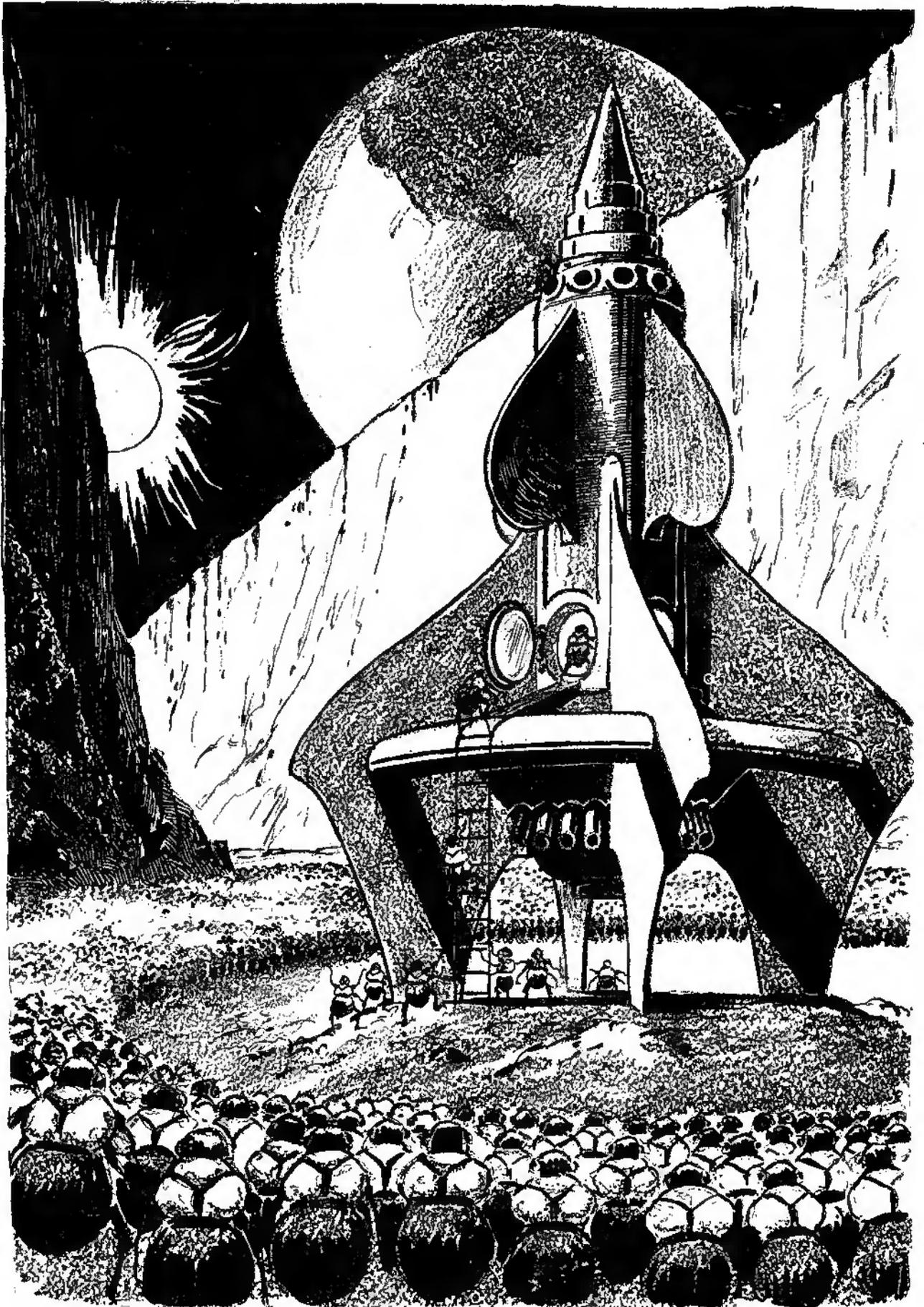
During this period came the lull just before the terrific glacial ages which followed it in rapid succession. The climate was mild and warm, there were no great upheavals or floods and it was in this setting that the dinosaurs played their last great part in the drama of life and gave over world dominion to the mammals. Theirs was a glorious farewell indeed, for they culminated their race, which was the greatest of all the orders of the Reptiles, and their carnivores were the mightiest beasts of prey that ever walked the earth. And the mightiest of these, the most terrible engine of destruction known to the history of the world, was Tyrannosaurus Rex, King of the Tyrant Lizards.

As the scream ceased, the monstrous ferns and other foliages upon the cliff's edge parted and into the cheerful sunlight stepped Tyrannosaurus Rex. He walked upright, as did all carnivorous dinosaurs, and his ugly, cruel head with its incredibly powerful jaws, towered a full eighteen feet above the earth. His fore limbs were much shorter than his hind legs and were carried as a man would his hands. All four feet were armed with long, curved claws, any of which could rip open an enemy from jowl to flank in one lightning-like stroke. In the hind limbs were also the tremendous running and jumping muscles, capable of carrying the heavy body over the ground at a speed that was truly marvelous. His body, though ponderous, was compact and lithe, hiding within it muscles that were the boast of Nature, while to finish it off was a long and weighty, but easily handled, tail.

HERE is an altogether different tale, and short as it is, it is pregnant with thought-provoking ideas which will not fail to hold your interest. The story is told so convincingly and the facts set forth are so plausible, that somehow we hardly find it difficult to believe it to be true. We hope to have further stories from the pen of this new author.

SWEEPING his cold, hard, expressionless eyes over the scene before him, he detected, in a swampy, rush-infested lake, one of the gigantic herbivores on which his kind fed. For an instant, body tensed,

head poised and immensely reminiscent of a snake, he stood there; then he disappeared and the foliage slipped back into place as silently as it had opened. He traced his way back through the jungle to a narrow gorge which had at one time been a water course and now made a path down to the level of the plain. Down this he moved as easily and smoothly as a cat and thus around the base of the cliff. Here he made sure his quarry was still engaged in filling its enormous stomach and then left the cliff and started in its direction. Crouching, darting, making use of every cover, he gradually



On all sides were the tremendous mountains; behind him was the sullen machine, while slowly creeping down the valley floor over the heads of the lunarians, showed the baleful green light of the great-earth orb. . . . In a trice the valley was filled to overflowing, all eyes concentrated upon the dominant figure by the cylinder upon the platform.

approached the feeding saurian. The latter, a monstrous, grotesque beast, heavy of body and legs, but with an inconceivably elongated neck and tiny head, stood on all fours, plucking and eating the succulent roots and grasses at the lake side. From time to time his head and neck writhed above the surrounding tall rush-like vegetation, as he watched for possible enemies. At such times the great beast stalking him would cease all motion, holding himself tense in the peculiar manner of reptiles, skin loose but muscles held like corded steel. When he had reached the limitations of the taller rushes, Tyranosaurus gathered his hind limbs under him, the final move before the charge. This was not a test of strength he was about to enter, but a trial of speed. The herbivore had no valid means of defending itself against the meat eater and so depended upon its ability to reach the comparative safety of the lake, into which Tyranosaurus would not follow him. Just as the latter was prepared to leap, his prey raised its head for another wary inspection. Slowly the ridiculously small head turned to take in all of the scene; was about to sink to its feast of grasses again, when it stopped short and stood as though frozen.

Steadily the two great beasts stared at each other, resembling fantastically carved rocks in their motionlessness; an easy, roaming wind sighed and rustled among the rush tops and a weird, throbbing cry floated across the serene surface of the lake. Then the tension broke and the gigantic saurians sprang into action. With a dry, sibilant hiss, the carnivore flashed across the clearing in great, earth-shaking bounds while the grass-eater charged, at amazing speed for so ponderous a creature, toward the shore of the lake. Fast as he was, Tyranosaurus was even faster, and, not ten feet from the shore, sprang fairly upon his victim's back. There was a moment of thunderous crashing, an intense, high-pitched screaming and then the violently agitated rushes resumed their tranquil bowing to the idling wind. Tyranosaurus Rex had once more proved his right to kingship.

WHILE the kings of the earth roamed and fought over the forming surface of their world, the fate of an entire race hung on the word of one individual. Some two hundred and forty thousand miles away was the moon, offspring and captive of the earth. Being much less than half the size of its larger companion, it had naturally cooled much more quickly and at a far earlier period was capable of supporting life. And life, with its incomprehensible purpose and apparently aimless struggles, immediately took possession of the diminutive globe. It developed and prospered, reached its maturity and then the moon began to die.

Though evolution upon the satellite had not proceeded along the same lines as that upon the earth, it had produced, as a climax, an intelligence which was in advance of that existing in man upon the terrestrial sphere to-day. The creatures representing the pinnacle of lunarian intelligence were confined to a single species, and had been able, for an enormous period of time, to support their life upon the moon by artificial methods. However, thousands of years before the

actual occurrence, the lunarian scientists had predicted that the necessary chemicals, mineral ores, and natural gases used for the manufacture of the artificial foods, air, water and other staples of life, would disappear under pressure of constant use. It was apparent that the only course left when such a condition arose would be to leave the moon for another celestial body, and naturally, as the earth was the nearest, the migration would turn in that direction. For this purpose, through thousands of years, the lunarian scientists had been working, the progress coming closer and closer to the achievement throughout the centuries.

It thus developed, that, just before the extinction of the dinosaurs upon earth, the accrued knowledge of thousands of years of lunarian toil was possessed by one individual, who had, from this tremendous research work, evolved a machine which he believed could convey him and his race to the safety of the terrestrial planet. This machine came none too soon, however, for already the life on the higher mountains was fleeing to the lowlands. There was, therefore, no time for the scientists to make trial flights in which to make certain of the ability of his machine to cross the fearful, limitless abyss or to ascertain whether or not his race could exist upon the new world into whose characteristics, though so near, the lunarians had been unable to probe very deeply. The inventor, under these pressing urgencies, decided that he and a number of the most brilliant scientific minds in his world would embark on this greatest of all journeys as soon as conditions allowed. If it was successful, he would return alone and direct the completion of the thousands of interplanetary cars then under construction and the immense migration would begin. It was urgently necessary that he should return, for he alone understood the intricate and complex machinery of the cars. Without him all would be lost. All other occupations had been long since abandoned, and the whole lunarian world waited breathlessly for the hourly reports coming from all over its surface to the great underground workshop where the vehicle to convey the inventor and his colleagues was receiving its last overhauling and testing. Their purport was monotonously the same; one after another the gigantic air manufacturing plants ceased work for lack of materials, the heat-dispensing centers gave out, or the lighting systems were failing. The lunarian populace, as a body, were moving to the three great workshops, where the migration would start, and here rumor and panicky fear had run riot.

The testing and stocking of the inventor's private machine were soon completed, and as they were just entering the moon's long night, the inventor determined that before the next daylight he would have left for the earth. It is perhaps well to explain here that the lunarian night is now about twenty-nine earthly days in length and was, even at that early period, but little shorter.

The workshop in which the completed machine was housed was situated at the end of a long, narrow valley between stark, rugged mountains, high beyond all comprehension. These terrific piles ranged miles into the sky, fantastic and abrupt in outline and formed a firing

background for this strangest of all ventures. The workshop, which was underground, was nevertheless higher than the rest of the valley, being on a portion of the valley floor which had been volcanically raised. It was on the roof of this workshop that the machine now stood, a sharp-nosed, winged cylinder. It seemed to be, as it awaited the appearance of the tremendous orb of the earth over the guarding mountains, some dread messenger of Fate, sombrely indifferent.

UNDERGROUND all was seething bustle; in the workshop last minute tests were being taken, harnesses were donned and strange apparatus were being gone over minutely. In the great underground chambers beneath the main valley floor the mightiest concourse ever gathered together awaited, with tense emotions, the signal which would send them rushing to the surface. At last it came and in a trice the valley was filled to overflowing, all eyes concentrated upon the dominant figure of the cylinder upon the platform. A death-like silence fell, the mountains, the lunarians, the car itself seemed waiting the appearance of those great adventurers, who dared the very depths of infinity. Then a trap-door beside the car opened and the scientists filed out, all immediately entering the machine with the exception of the inventor who carefully went over its entire exterior. Finishing his inspection, he turned and gazed out upon his fellows, who had come to see him off in this most monstrous of all journeys. In him lay their hope of life.

In one way only he resembled a human; he stood upright. In every other way he had progressed along different lines of development. His body was curiously like some of the lower terrestrial animals in that it was segmented though the segmentation ceased at a portion which could be called the thorax, as the head was immediately joined to this latter part. He possessed six limbs, all of whose extremities were equipped with elongations resembling digits, but which were much more flexible. Each so-called digit contained a number of strong sucking organs. The entire body was encased in a hard, horny substance which was jointed frequently. His head was, in contrast, covered with some growth resembling fur which completely encircled the large compound eyes and side closing, horn-like jaws. He used only two limbs for walking.

Dressed in thick, cold-resisting clothes and carrying a heavy helmet, he presented a peculiar figure. On all sides were the tremendous mountains; behind him was the sullen machine, while slowly creeping down the valley floor, over the heads of the lunarians, showed the baleful green light of the great earth orb.

What strange thoughts and feelings roamed through the mind of this being who thought to wander at will in the motionless, boundless depths of eternal space as he bade good-bye to his world? Did some prophetic foreboding stir uneasily in the depths of his mind? Silently he looked and silently his fellows returned his look; then he turned and entered the cylinder. The great circular door clanged shut, sounding weirdly hollow in that silent valley, the powerful mechanism beneath the rocket-like car slowly, in dead silence, raised

it until its nose pointed into the far, mysterious reaches of the star-studded sky, and all was ready for the most momentous journey ever conceived.

All was tensely, strainedly silent in the valley; from high above, the earth-orb looked down, coldly impersonal, flooding the valley and the jagged peaks in its strange, green light; beyond it innumerable stars sardonically watched this attempt to avoid the inevitable, and upon the platform rested the planet car, seemingly waiting for some remote call to send it hurrying into the darkness above. For ages, it seemed, the portentous silence held, all motion lost, then came a tremendous, earth-shaking roar and, in a monstrous cloud of greenish vapor, the sky car flashed away on its fearful plunge into space. In heavy silence, the lunarians departed from the valley and left it once more to the desolate solitude.

ONCE more the warm, golden sun shed his hazy effulgence over the vast, prehistoric American plain. The tall, drowsy rushes bowed fitfully to the unhurried breeze and billowy, sun-reflecting clouds sailed slowly along the horizon. In the distance, the dancing heat waves performed queer antics against the background of the familiar water-worn cliff and the quiet lakes smiled dreamily as the breeze ruffled their surfaces. Strange and heavily armored insects zoomed and rumbled among the reed-beds and high above, so high as to be barely distinguishable against the faultless blue of the sky-vault, some distant progenitor of the immense bird-life to be, swung on motionless wings in great continuous circles.

Without any jarring effect on this somnolent peace, a deep, resonant thrumming became gradually perceptible, increasing in volume until a pointed, winged cylinder from which the sound came, appeared from behind the cliff and sank gently into the rushes. For some time it lay there, without sign of life, but at last the thick, circular door opened, and the lunarian inventor stepped boldly into the earthly sunlight. He gazed at the strange landscape for a space, and none may know what thoughts and feelings passed through his mind, what ambitions were appeased or what long restrained desires were, in this hour, fulfilled and satisfied. He had accomplished the impossible! He had crossed the greatest boundary life has yet encountered!

As he stood there in thought, his companions began to group themselves about him, gazing with wonder and delight at the luxuriant vegetation, the darkly limpid water-ways and the varied and plentiful life. It now only remained for the inventor to return across the bottomless abyss, direct the completion of the thousands of sky-cars which he had before been unable to do, and the great migration could begin. It was necessary, however, to remain some days on the earth for the machine had to be tested and gone over, before attempting the return trip. During this time they could explore the immediate vicinity and gain some knowledge of the earth's condition and life. They, therefore, spent that day in a rigorous examination of the life about and composition of the nearest of the lakes.

When the sound of the lunarian car had first become

noticeable, *Tyrannosaurus Rex*, perhaps out of curiosity, had followed it through the jungle on the cliff to the edge of the plain. He had, therefore, been a witness to the landing and primary exploration of the lunarians. For some reason he had not attacked them, but after a few hours, he returned to the depths of the jungle where he would have probably remained, had it not been for the moon-men. Led on by wonder after wonder, the latter had wandered farther and farther afield, and on the second day decided to explore part of the jungle on the cliff before the inventor left. As yet they had seen none of the great dinosaurs and had no knowledge of them.

The lunarians set out in a body and, after laboriously scaling the face of the cliff, proceeded directly into the dense, tropical woodland. This afforded them much of interest and after aimlessly drifting from one object to another for several hours, they came upon a gulch, which had at one time been a water course and now led down in a gradual slope to the plain. Here the geological and mineralogical formations held their attention and they were soon engrossed in the study of specimens. Unknown to them, this was the habitual path used by *Tyrannosaurus* when going down to the plain. The forces of Fate had gathered and were soon to strike.

Tyrannosaurus Rex, coming down the canyon with his usual easy caution, came suddenly upon the strange creatures he had seen the day before. He was undiscovered, so he stopped and watched them, his unwinking, jet eyes and cruel, hideously-armed mouth giving no expression at all to his face. He had come upon them at an abrupt turn in the canyon and only his head was visible, the remainder of his body was hidden by the moss-covered rock. From here, his great body held tense and rigid, he watched them "with that crouching, utter, motionless gaze," which only reptiles can assume. The afternoon had almost gone, the sun was approaching the distant, unbroken horizon and the long beams of sunlight were feeling their way up the tree shaded canyon, which opened into the west, when the lunarians decided to start back to the car. And then Fate struck.

A LUNARIAN, preparing to leave, looked up from a rock he had been studying and stared straight into the grim glare of the gigantic saurian. For perhaps a minute he stared motionless, one limb outstretched for an instrument and half bent over. This was the moment before the blow fell and the forest, the air, the whole universe seemed held in breathless suspense. Then, with a peculiar, chattering cry, he sprang upright, seized a strangely formed apparatus from his middle and worked the tentacles on the end of his limb convulsively over it. With a rasping hiss, a dark red stream, which ceased almost as suddenly as it began, sprang from one end of the instrument and flickered lightly over a portion of the saurian's throat, leaving behind it a deep gash from which the blood flowed sluggishly. At the sound of the cry the lunarians faced about just in time to see *Tyrannosaurus*, bleeding at the throat and hissing terribly, spring from behind the turn in the canyon some distance away. They saw with horror the tremendous power expressed in every line of

the great beast and with one accord began retreating slowly down the gorge. This retreat changed immediately into swift flight as *Tyrannosaurus* sprang in pursuit.

It was hopeless from the start, the monstrous leaps of the saurian far surpassed in speed anything they had thought could be possible to lesser living creatures. They soon stopped running, therefore, and faced the charging giant, their one thought being to save the life of the inventor, at any cost to their own. Though the red streaks from the lunarian weapons seared his body constantly, *Tyrannosaurus Rex* did not once hesitate from his fearful charge down the canyon and, unknowingly, the fate of humanity to come hung upon his ability to reach and wipe out his enemies. If he failed, if he were killed, and the lunarians escaped, they would overrun the world and preclude forever the development of man on the earth. But nothing could stop that irresistible charge. Suddenly he was among them, striking and ripping with all four feet. In the first second, the heavy tail crushed the life from two and the death of the others soon followed, until there remained only the inventor, backed against the canyon wall. *Tyrannosaurus* stood, breathing heavily, in the center, eyeing him. The saurian had not escaped unscathed from his attack, blood ran from wounds all over his body and one foreleg hung limp and useless at his side.

For only a second did he pause and then sprang full at the lunarian. Even as he left the ground, a red stream played momentarily upon his body but could not stop him from his purpose. He struck beside the inventor. One huge foreleg delivered a fearful blow and the lunarian lay stretched upon the rock floor of the ancient water course.

A flashing movement, a second of time, and the work of uncountable centuries, of unnumbered millions of years, was gone for naught, as though it had never been. Why had life originated upon the moon, why had it struggled up from simplicity to complexity, from ignorance to brilliant knowledge, if it were only to be destroyed in the end by a giant inhabitant of the earth? Such is life always, seemingly without purpose, aimless, incomprehensible and playing a game it cannot hope to win. Extinction is the only end for any species; thus went the great amphibians on earth, giving place to the dinosaurs who also, after millions of years' development, disappeared and were replaced by the mammals.

As *Tyrannosaurus* gave the death stroke, he swayed and a second after the lunarian fell, his slayer sank beside him. A few lunarians stirred and twitched but finally, except for the sobbing breath of the dying dinosaur, all was still. *Tyrannosaurus* lay, as did the still-living inventor, facing the west, and both could look out over the unbroken plains to the western sky. The great, tawny sun was just sinking behind the wavering grasslands and its level rays reached far across the plain's floor and up the canyon, bathing all in a solemn, ethereal glow. High above them in the broken canopy of multi-colored trees and giant ferns an easy, roaming wind sighed and rustled, now and then exposing a patch of blue sky. From far away, across the still bosoms of the dreaming lakes, drifted a weird, throbbing cry,

a cry as sorrowful, as mysterious as age-old life itself.

The sinking sun bathed the saurian's grim visage in a soft, warm light and as he gazed into the last sunset he would ever see, across far spaces into the mellow glory of the Life-giver, Tyrannosaurus' eyes softened and he was vested with a dim, far-away dignity as one whose purpose is accomplished. Gradually the harsh sobbing diminished and finally ceased and Tyrannosaurus Rex, King of the Giant Lizards, most terrible of all carni-

vores, and most feared, had gone forever from earth.

The sun was gone. Far along the west stretched a streak of amber light, all else the night had claimed. High above the canyon, showing through a space in the leaves, sailed the round, full moon throwing her pure, white light, like a protecting mantle, over the broken, pathetic body of her perished son, the inventor, while deep below her surface she hid a race awaiting his triumphal return. Long would they wait—Long.

THE END.

The World of the Giant Ants

By A. HYATT VERRILL

STORIES about ants are no longer a novelty in fiction. Scientifiction stories about ants have been written before.

But we unhesitatingly state that this new story, by the well-known writer, is no doubt the greatest ant story that has ever been conceived.

The editor of this magazine, in a talk with Mr. Verrill, who is not only an author of note, but a noted explorer as well, asked him to do a special ant story for this magazine. It is interesting to note, that practically the entire story was written in the South American jungle, during Mr. Verrill's latest expedition.

Readers will remember that Mr. Verrill discovered a new race of bearded Indians near the Peruvian wilds in South America. Outside of this, Mr. Verrill has for many years been making a deep study of ants and their habits, and the things that he tells us of them in this story are not at all exaggerated. If you magnify the usual ant, you will have exactly what Mr. Verrill gives us in this notable document.

We wish to impress upon the reader, the important fact that the habits of the ants as described in this story are scientifically accurate, in practically all respects.

Few people are interested enough to study a dry scientific work of ant-life, but here we are given the greatest scientifiction story of ants and the way they live, made particularly interesting because it is in fiction form.

In order to enhance the value of the story, the editor has taken the liberty to bring in a number of illustrations taken from well-known scientific works.

This story is published in the Fall Edition of
AMAZING STORIES QUARTERLY

Now on sale at all newsstands

Stenographer's Hands

By DAVID H. KELLER, M.D.

HERE is a story that no doubt will arouse a good deal of controversy. It probably will be denounced in many quarters, while in others it will be praised to the skies.

We live in a machine age. Only efficiency and accomplishment is of any importance in our present scheme of life. Everything works along the stencil line nowadays. We wear the same clothes, of which several thousand are cut with the same die; we wear the same sort of shoes, all made by the same machines and all alike, including the polish; we eat the same sort of food, coming out of the same cans, by the million; we read the same kind of literature, printed by the thousand and the hundred-thousand.

The stamp of the machine is upon our bodies and upon our minds. We all act alike, and come pretty near thinking alike. It seems to be quite the thing for all of us to be as exactly alike as we possibly can be. If we vary this formula, ever so little, we become conspicuous at once, which is not always to our liking.

And when it comes to the great industrial interests, the big employers naturally expect to have efficiency, which apparently they can only get by having their workers all perform along certain mechanical lines. All must work alike in certain endeavors and all must perform alike if results are to be had.

What is the logical end? Read Dr. Keller's most absorbing story. It will open your eyes. It will probably thrill you, or perhaps you will wax hot with indignation—all depending upon your temperament.

At any rate, this is one of Dr. Keller's best efforts so far.

This story is published in the Fall Edition of
AMAZING STORIES QUARTERLY

Now on sale at all newsstands

The LAST MAN

By Wallace G. West

. . . . By that time, however, a significant precedent will have been established and a lesson learnt that will not easily be forgotten. The superfluousness of men above a certain essential minimum will have become recognized officially and unofficially as a social fact. The legislature will establish laws to guarantee that this minimum should not be sur-

passed, and in a very short while it will become a mere matter of routine to proceed to an annual slaughter of males who have either outlived their prime or else have failed to fulfill the promise of their youth in meekness, general emasculation and stupidity.

—Anthony M. Ludovici's *Lysistrata*.



M-I SAT in his glass demonstration cage and hated. He hated the endless, sultry afternoon. He hated the dusty museum in which he had spent all his life. He hated the limp trees of the park which stretched in all directions, their fronds, sagging and listless in the midsummer heat, half obscuring, half revealing the gigantic structures of the metropolis in which they panted for breath.

But most of all he hated himself! Why could he not have been born a woman? He stared enviously at the crowd of narrowflanked, flat-breasted workers, who stood outside the cage and gazed at him with dull curiosity on their soulless faces. Women at least had a purpose in life, he ruminated. They could work, straining their muscles and minds eternally at tasks that exhausted them, so that at night they sank into a stupor of forgetfulness which was only broken when the work gong sounded again.

While he, the last man, had nothing to do but appear in his cage on rest days to appease the workers' curiosity as to what a man had been during the dark ages when the human race was bi-sexual. Otherwise, his time was his own.

Nobody molested him unless he attempted to leave the museum unattended. His keepers brought the best food obtainable, saw that his wants were attended to, and allowed him to browse long months away in the files of the museum library, where the dust of ages was piled inches thick over the imperishable metal-foil volumes.

Even curiosity, that one trait which had dragged mankind through the mire of prehistoric times, into the trees, across the seas, and at last to a magnificence which had almost allowed him to touch the stars, was dying. It was only the fact that the last man might be seen there, that dragged the plodding toilers through the little park on rest days. Otherwise they strictly avoided the place, spending their time sleeping, or staring blankly in front of them like

wearied cattle. It was useless to think of new things.

The museum was a mystery, even to M-I. Built ages ago before the race had started its long decay into automatism, it towered story on story above the ground level, and burrowed additional stories beneath the earth. Vast stretches of it he had never explored. In other wings the lights had long ago expired, and he was forced to creep through tottering skeletons of prehistoric animals, among the ruins of towering bookstacks, searching here, there, everywhere in an effort to find the meaning of all this.

THE bloated sun sank with infinite slowness behind a gigantic glittering structure which occupied one whole side of the park. The crowd of curious drifted away with equal slowness. The rest day was over. To-morrow the human hive would drone again with unceasing, breath-taking activity, striving, ever striving, to produce enough food to supply the myriads of beings, which inhabited Nu Yok.

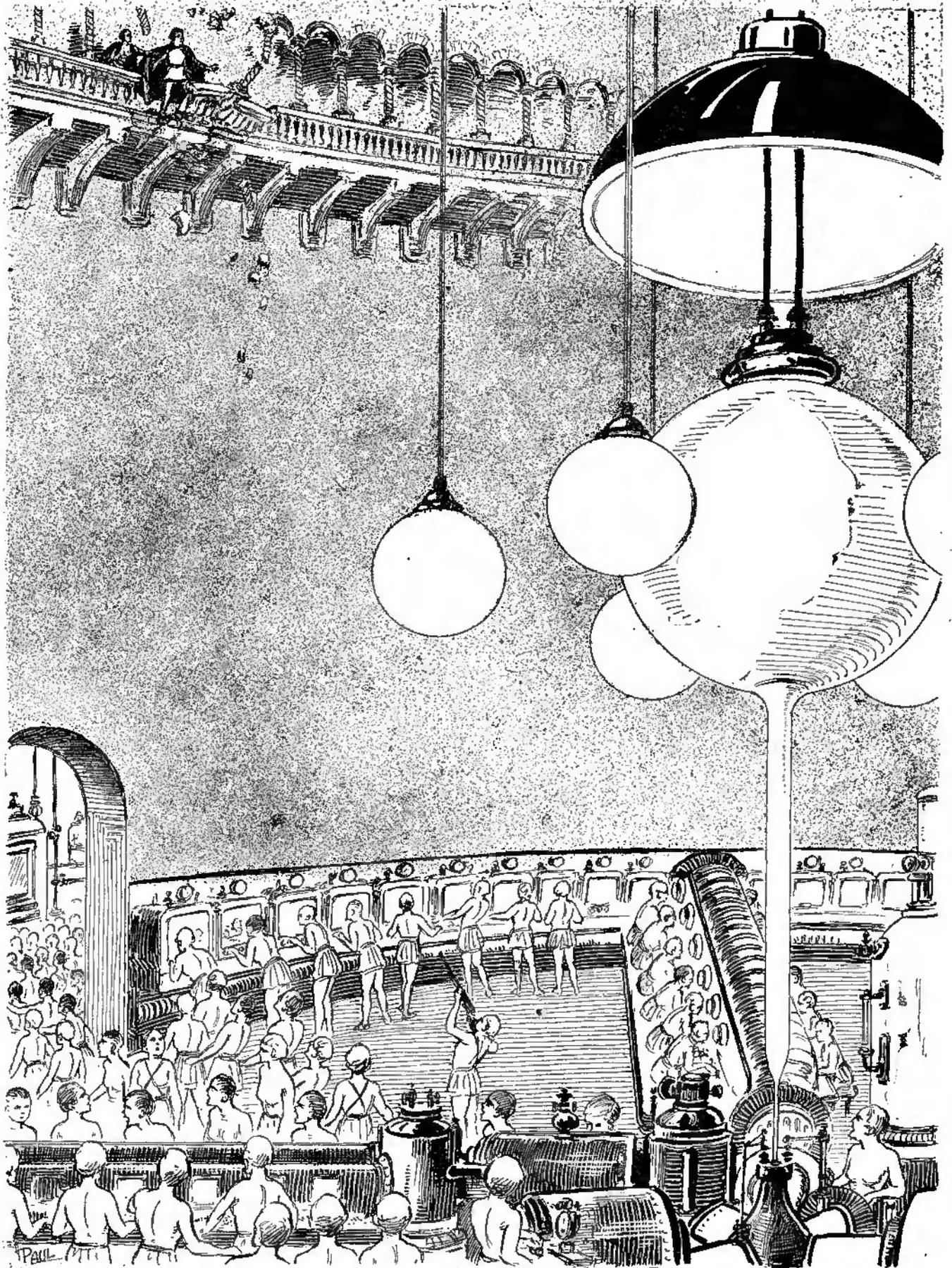
Why, he wondered, was not the population cut? With reproduction reduced to a mere matter of chemistry, that should be an easy matter. Then he realized that if the population were reduced, factories would be idle; wheels would cease to turn. He nodded to himself as he gathered up the few books with which he had been killing time during the day. That would be against the economy of the hive. No one must be idle—no one

must cease from unremitting toil—except himself. He ruminated on these strange things as he slowly retraced his steps toward the little room where he ate and slept.

Perhaps it would be well to describe this museum freak, as he loiters down a long, crumbling corridor in the half-darkness, broken here and there by spots of semi-incandescent glow. He is tall, well-formed, hardly distinguishable from the man of the twenty-fifth or thirtieth century, except that his cranial development is somewhat more marked. He appears to be in mature youth, he is perhaps sixty or seventy years of age. He

ACCORDING to Kipling, "The female of the species is always more deadly." By that, he means that she is stronger in her own way, and we know that she usually is more numerous. Even among human beings, there are more females than males. Perhaps in thousands of years, evolution will have progressed in such a manner that the world will be entirely peopled by females. This is not so impossible as it would seem to be, because with many insects, the female of the species already predominates.

The present story then is founded upon an excellent scientific basis and the story itself is as excellent as it is original and unusual. You will not forget it for a long time.



Unwittingly he had leaned farther and farther over the railing of the balcony. Now, without warning, its ancient moorings parted and a large section of the balustrade tottered slowly outward and fell.

is slim and taut of body, like one who has taken care of himself physically, but he has a slight stoop which indicates that he has spent much of his life poring over books. His form is trim and masculine, with flat hips and broad shoulders, and lacks that sexless smoothness which was so noticeable in his watchers of the afternoon.

In fact he is a throwback, an unexplainable atavism, which the physicians have decided to preserve for a while as a warning and a curiosity.

He lounged listlessly in his room where a gaunt, sour-faced woman—if you could call a creature a woman who was as sexless as a worker bee—was stirring a mess in a bubbling kettle.

"What!" he grumbled, "Carbohydrate 5482 again? Why don't the food laboratories vary their formula once in a while? They used to, when I was a youngling."

"Costs labor; costs labor," she snapped back. "The sources of supply are getting scarcer, too. Besides it's not for the likes of such as you to be complaining."

"But why not discover new courses of supply?" he puzzled.

She straightened from her stirring and surveyed him with loathing and undisguised hatred. "'Tis a good thing you are the last man," she stormed. "Such crazy ideas! New sources of supply! When you well know the last source of supply was discovered two hundred thousand years ago! Shame! To suggest such blasphemy! Atavist!"

With that last shot, which made him wince, she left him to his food.

He attacked the chemically manufactured soap with something like gusto. He knew it contained all the vitamins, proteins and other ingredients, combined into just the right form to sustain life at the lowest possible cost.

He ate in the shortest possible time. Then, relaxed and surfeited, he dropped into a reverie which, as always, revolved around his uselessness in this feminine world. From his reading of forgotten books he understood pretty well the conditions which had brought about the mono-sexual world in which he lived. The enormous release of feminine energy in the twentieth to thirtieth centuries, due to the increased life span and the fact that the world had been populated to such an extent that women no longer were required to spend most of their time bearing children, had resulted in more and more usurpation by women of what had been considered purely masculine endeavors and the proper occupations of the male sex.

Gradually, and without organized resistance from the "stronger" sex, women, with their unused, super-abundant energy, had taken over the work of the world. Gradually, complacent, lazy and decadent man had confined his activities to war and sports, thinking these the only worth-while things in life.

Then, almost over night, it seemed, although in reality it had taken long ages, war became an impossibility, due to the unity of the nations of the earth, and sports were entered into and conquered by the ever-invading females.

AFTER that the rest of the pitiful story was simple. The useless ornamental males began to be treated in much the same fashion in which the worker bees treat the drones. Having lost the mastery of the world, the men found themselves helpless and in the way. Slowly but steadily they were exterminated by the ambitious females.

There had been fighting, of course. M-1 recalled with a thrill the tales of those last battles. It was during the great famine, just before chemists had discovered how to manufacture food out of inorganic matter.

"Then, suddenly," to quote a book of that period, "a few of the leading women perceived with apocalyptic clarity, not only that the superfluity of men had become a burden on the community and a menace to the food of the children, but also that the reduction of their number to the barest minimum indispensable for the purposes of fertilization would be a two-fold boon—it would relieve the food crisis both for the moment and possibly also for the future, and obviate forever the danger of a masculine or slave rising.

"A sex-fight at the distributing station of a large store sufficed to light the first spark of this new conflagration. A dead set was made against the men, not only around the original focus of the trouble, but everywhere. The legislature, recognizing their opportunity, supported the popular fury, and proceeded to a systematic slaughter of males, until, with the help of the regular troops, it was found practicable to protect and preserve a small nucleus for next year's fertilization."

Oddly enough M-1 admired the neatness and dispatch with which his kind had been wiped out. What use were they?

Finally some last genius of that glorious age had discovered the method of reproducing human life by chemical formula and the men were dispensed with altogether. Only a few museum specimens were retained to warn the world of the horror from which it had escaped.

In the ages which followed, great physiological changes took place. Women, no longer having need of sex, dropped it, like a worn-out cloak, and became sexless, tall, angular, narrow-hipped, flat-breasted and un-beautiful.

But the world was perfect now, M-1 realized. No further change was necessary. He grew ashamed of his suggestion that new discoveries might be made. Everything was known! Life was complete, vibrant! The millenium was at hand, and he was the only discordant factor.

But somehow, he was dissatisfied, nervous, excited. Catching up a warm robe—for the long nights, caused by the gradual slowing down of the earth's rotation during the ages, were as icy as the days were sultry—he wrapped it about him and started pacing the corridor again toward the observation cage. Something at variance with his environment stirred within him, he knew not what. Some urge of the summer which he could not drive away. The world was perfect. Yet he felt a note of misery which sickened him.

He remembered the dull, work-besotted faces of those for whom he posed once every ten days. There was not the joy among them that should be expected in a perfect world—the joy that the old, old books of poetry and love, which he had deciphered, indicated the world to be full of. What was wrong?

His steps muffled by the thick dust, he stumbled along, finally emerging into the glass cage where he had spent the day, to stand staring hopelessly at the stars. For the first time he had a feeling that things were not well; that life had become shamefully muddled somehow.

Shaking himself out of his lethargy, he glanced about him—at the city which glittered not far off, its lights flashing like the signals of fairyland—at the dreaming trees, now revived from the universal weariness—at the half moon just peeping over the horizon.

Suddenly he felt that he was not alone. Glancing sharply over his shoulder, he fancied that he saw a dark shape take form among the trees.

Then, winging its way through the impenetrable glass of the cage, came a voice, clear and musical; unlike the dead accents which he had become accustomed to from his keepers and from occasional curious celebrities.

In his astonishment he forgot the purport of the words—if they were words—for the message seemed to ring inside his head rather than in his ears. Like a flash he realized that the person outside was using telepathy, that mythical art supposedly lost since almost the dawn of history.

"Who are you?" Like a knife thrust the query flashed into his consciousness through the soundproof glass.

As in a dream he felt the segments of his brain click into a long-forgotten connection to reply in kind: "M-1, The Last Man."

The figure outside approached the cage and in the dim moonlight he stared in wonder. Hair red as a slumberous fire—eyes blue as the heavens—a face fair as the dream faces which sometimes tortured him.

Unconsciously, true to his training, he recoiled. "An atavist!" he gasped, "A throwback! How did you escape?"

She laughed, and though he could not hear the fairy sound, he saw the back-thrown head, the rounded throat, the laughing eyes. "The keepers are so dumb," she answered. "It is so easy to be free. Why don't you join me?"

He shivered as at a sacrilege.

"Don't talk so," he protested. "It would mean your death if the keepers heard. It is wicked."

Again she laughed and this time tossed one milk-white arm against the moon. "Nothing is wicked," came the message. "And their dead minds are too dull to understand. Come out and dance in the moonlight with me."

For a splendid instant he had the impulse to seize a chair and smash his prison of glass, but lifelong inhibitions were too strong. A wave of horror and loathing seized him. "Go away, demon," he gasped. "You are a rebel. I shall warn the guard."

Unafraid she wrinkled her nose at him, then wrapping about her a long black robe which but half concealed her deep breasts and the forgotten womanly grace of her carriage, she whispered, "Another time," and vanished among the shadows of the park.

FRIGHTENED, horrified, yet fascinated as though by a devil, he stood staring after her for a long moment before he fled back down the protecting corridor to his room as if he were pursued by a ghost.

For long hours he sat at his desk staring into the shadows which the light did not dispel. Well he knew that it was his duty to report an atavist at large. Well he knew the havoc they had wrought in the past by waking uprisings against the established order, by fanning dying sparks of revolt into short-lived conflagrations, with their talk of beauty and love—and liberty. But that was long ago, while there were still men, although a dwindling minority.

Now he was the last man. The call was to him. A witch like those in the old, old stories, was lying in wait for him.

He fell into a fitful slumber, but was beset by dreams—strange, mad dreams of beauty and soft arms and flashing limbs which brought him to his feet in a sweat of agony a dozen times during the night.

Old WA 10 NA 56, whom in defiance of the rules he always called Wana, found him, dishevelled and feverish, when she brought the morning meal.

"What's the trouble?" she queried anxiously, for the position of warden to the last man had its responsibilities. "Are you ill? Shall I call a physician?"

"No," he snapped. "I need a change, Wana, that's all. Let's drive to the seashore for a day. This place chokes me."

"All right," she grumbled. "Though what good you get out of sitting and staring at the waves I can't understand. Nobody else does it. But you're a freak," and in spite of her surliness, a wisp of pathos crept into the last words and her face, which looked as if the soul had been eroded from it long ago, assumed a haunted expression.

A car was brought round and they clambered in—Wana dressed in nothing at all, for with the passing of sex the need for clothing had ceased to exist, and the man swathed in a long, black robe, such as those used to cover the infirmities of the aged.

Through the wide, straight boulevards, flanked on either side by glistening skyscrapers of surpassing beauty, they drove at breathless speed. Everything was clean with a dazzling, agonizing cleanness which made the senses reel. He longed, before they had driven half an hour, for the forgotten dust and gloom of the museum.

There, there was no traffic jam, no noise, no hurry—but only a dogged, persistent energy that was capable of moving mountains, but knew not where to move them. Through the sides of the plate glass edifices of the metropolis, he caught glimpses of myriads of workers, toiling frantically in perfectly hygienic surroundings, soaked in the health-giving ultra-violet rays of the sun, which the crystal walls admitted in their

full power. He found himself panting for breath like a runner in a nightmare, and cursed his stupidity in allowing himself always to be thus affected when he was taken through the manufacturing district.

At last they passed between two thousand foot high structures and emerged abruptly into the open country. There were no suburbs, no encircling truck farms. The city ended with the abruptness of a thunderclap, and towered behind them like a heap of diamonds.

Wana pushed forward a silver handle. A rocket motor in the rear of the car began coughing gently. The machine rose into the air and shot, at tremendous speed, over the deserted countryside. Then, under the skilful guidance of the driver it settled to the ground on a sunny, tree-covered knoll near the seashore.

On all sides stretched unutterable desolation, for the race long ago had abandoned the unprofitable tilling of the soil, and now resorted solely to the converting of inorganic into organic matter for food. The countryside round about was as wild and abandoned as in the forgotten days when Sir Walter Raleigh first stepped ashore there.

Never straying from under the watchful eye of his keeper, M-1 strolled about the beach or swam in the warm waters of the Atlantic. He had tossed aside his disguising robe, now that there were no spectators, and, relieved from the tension of the city, romped in the warm sunshine like a child.

At noon he swallowed some food pills and, tired by his morning's exercise, went to sleep under a massive oak tree.

HE awakened by a sibilant hissing close beside him. Looking up, he beheld the girl he had met in the moonlight the night before.

"Shh!" she cautioned. "Your nurse is asleep."

"How did you get here?" he gasped.

"Vacation," she giggled. "My guards are searching for me in the woods."

"You followed us," he accused.

She nodded and her face assumed a faint pink tinge which puzzled him, yet set his pulses throbbing. "I heard you talking about your vacation, so I became conveniently ill and suggested a trip to the same place."

"Heard me?" he puzzled.

"Well, yes. Or thought you—or—something. Telepathy, you know."

"Why ARE you?" was his next question as he stared at her supple grace. "I mean, why are you alive?"

"Oh, a sub-normal development, like yourself," she replied, and oddly enough there was no shame in her voice. Rather, he decided, she gloried in the fact that she was a hundred thousand years behind her age.

"You see, they thought I was normal while I was a child," she added. "Then, when I went queer—you know their horror of killing things."

"Do you work?" he asked, remembering the universal law.

"Oh, sometimes," she nodded, as she seated herself beside him. "You know they" (she spoke almost, he realized, as if she were mentioning some lower order of animals) "have lost their sense of color values to a

large extent, and they find me very valuable in the food factories, where the color of the slides has a great deal to do with the ionization."

"Why," she asked suddenly, turning toward him. "do you stay in that musty museum?"

"Why," he answered her, "do you stay in the food factory?— Because you can't escape."

"Can't I?" she mocked.

"Yes, you could run away," he admitted, "but then what? Away from the food distributing stations, you'd starve to death in two weeks. What would you eat?" he demanded, his exasperation rising at her superior smile. "Bugs? Grass? Animals?" the horror of this last suggestion almost choked him.

"Why, yes," she admitted serenely, and to his consternation began stripping a bush of its fruit and putting the dark red berries into her mouth.

"Stop!" he cried, grasping her arm. "That stuff will kill you! You must know that the human stomach has atrophied from eating concentrated food for thousands of years."

"Mine hasn't. I've tried these berries before. Yours hasn't. You forget that we were born out of our time. Of course these—these animated fossils—would die." she admitted, turning up her nose at the reclining figure of Wana, "But not us! Try these." She dropped a cluster of the ripe fruit into his hands.

Hesitantly he complied. His mouth, unused to anything but pills and liquids, puckered strangely. But, fired by her example, he persisted. Long idle salivary glands came slowly into action. His jaws, unaccustomed to munching, began to ache. But a satisfying feeling of warmth and well-being pervaded him. Taste, that long-lost fifth sense, returned.

"Music," he muttered. "It's like music inside of one." He reached for another bunch of the fruit.

"Easy," she laughed, dancing nimbly out of reach. "Don't forget that this is your first trial. You'll probably be sick as it is."

Their voices unconsciously had risen during this exchange, and Wana stirred in her sleep.

"Shh!" whispered his companion. "I'll see you next restday night. "Goodbye." Like a shadow she fled through the trees before his keeper could rub her ancient eyes and sit up.

"What have you been doing—letting me sleep like this?" she scolded, jumping to her feet, for Wana was very active, in spite of the fact that she had about reached the limit of usefulness and would be shuffling off this mortal coil in the lethal chambers not many years hence. "Come. It's time to go," she said, throwing his funereal robe about his shoulders. "The sun is setting. Climb into the car."

Escape! The idea, not entirely new, interested him as they rushed homeward through the evening sky. Was it possible to live as the birds and animals did? He was fascinated.

Then, as if in answer to his query, an awful stomach-ache gripped him as his digestive track, unused to solid nourishment, rebelled against the berries. He writhed in agony, and knew the horror of approaching dissolution. Luckily Wana was in the control cabin

and saw nothing of what transpired between the two.

But he did not die. The pains subsided, leaving him limp and covered with cold sweat. Was liberty worth such a price? He wondered.

DURING the next ten days he prowled in unaccustomed corners of the museum library, and, as chance would have it, came upon a book entitled: "Natural Food. A Warning of its Perils." Written at a time when concentrated nourishment had been in universal use but a short time, this volume warned backsliders into gourmandism, of the awful penalty which would ensue if vegetable or animal food was consumed. Unconsciously it dropped hints now and then, however, of the manner of preparing those odious viands. He read and remembered.

The next restday dawned and brought its usual crowd of worn toilers to stare into his crystal cage. But he no longer envied them. He no longer hated himself. In fact he was not thinking of such things. He was thinking only of the night that was coming.

Forgotten was his horror of the witch girl. Subconsciously his mind had made common cause with hers. They were one, fighting an alien world.

Darkness came at last. After consuming his nourishment, he avoided Wana, crept into the park, garbed in his black robe, and waited. Almost at once a soft, strong hand slipped into his.

"The spell works," said the well-known laughing voice. "The witch has you charmed. Did I not tell you escape was easy?"

They stopped and looked at each other under the moon, which had just passed the zenith. A great wave of tenderness and admiration swept over him. Awkwardly he seized both her hands in his.

"You're so different," he marveled. "You make me feel queer here." He tapped his chest. "Like tears," he stumbled, "and sunshine, and flowers."

She smiled, and leaning forward, gently touched her lips to his. A shock, like that from a dynamo, passed through him. He leaped back as though she had struck him, then reapproached.

"What was that?" he asked stupidly.

"A kiss," she answered.

Through the long avenue of elm trees, just the same as those which lined parks when the world was young, they wandered into the flood-lighted streets.

They attracted little attention as they loitered along. A few persons crossed their hands on their chests as they passed in a sign of respect. With their cowls closely drawn, and their slow pace, M-1 and his companion were easily mistaken for the Ancients, or Law Givers, and so passed unquestioned.

For, although it was a universal rule that persons should enter the lethal gas chambers as soon as they had passed the limit of usefulness—that is, when they could no longer do their twelve hours of labor daily—exceptions were made in the case of legislators and captains of working units, who were presumed to retain their intellectual faculties after their physical powers had declined.

These lucky ones lived until they died natural deaths,

but they went clothed in long black robes, to avoid awakening envy in those who were doomed to die much younger.

"What is your number?" M-1 asked suddenly as they entered a long, roofed thoroughfare lined on both sides with great warehouses and humming factories.

"My name is Eve," she replied, smiling. "I gave it to myself. I have forgotten my number."

A half-memory of some old myth stirred him. "The first woman?" he mused. "And I am the last man. Strange!"

He felt her mocking eyes upon him. "I shall call you Adam," she said softly.

"But that would be wrong," he objected. "Adam was the first man, wasn't he."

She merely laughed at him.

They turned into the portal of a vast structure which stretched for thousands of feet along the street.

"Where do we go?" he queried.

"This is unit 1,000 of the food factory," she explained. "I work here. Have you ever seen the inside of the hive?"

"Only in pictures," he replied. "I never was allowed to enter the factories."

They wandered down a long corridor, doors in which opened into what seemed endless rooms humming with monstrous machinery. Here and there, however, a room stood idle, its machines covered with dust.

"Those engines are broken," she explained. "The mechanics have forgotten how to fix them."

They went on, through labyrinthian tunnels, under overhead bridges, and on dizzy galleries that looked down on unremitting industry.

"Decay," she said suddenly. "Look at it, all about you, in spite of their breathless efforts. See," she pointed to a great mill, its screens broken and torn, its cogs rusted from centuries of disuse. "The world is dying. Soon—in a few thousand years, perhaps, when this almost perfect machinery crumbles yet more—it will be dead."

"And you and I will be dead, too," he said bitterly.

"And the world will be given over to the animals and the birds and the insects. Oh, the pity of it. A living tomb!"

"But I thought the world had attained perfection," he puzzled; "that all the great secrets of life had been attained; that life purred gently, like a perfect machine."

"So they say," she replied, "to hide the horror of the thing. But the machine is not eternal, and they have forgotten so much, so much!"

PASSING into the street once more they stepped on one of the rapidly moving surface platforms which long ago had supplanted the clumsy street cars and elevateds, and sped, at breakneck pace, through the heart of the city.

"Where to now?" he asked.

"To the birth factory," she answered nonchalantly.

He gasped and something of his old fear of her returned.

"But you dare not," he cried, clutching her arm,

"Remember the law reads: 'No atavist, on pain of death, shall enter the precincts of the birth factory.'"

She laughed gayly. "We shall not be discovered. Remember, they have forgotten so much.—You have seen pictures of the place?"

He nodded.

"Remember the dome?"

"Yes."

"Well there is a little gallery half way up it. Looks like a mere frieze from the floor. They have forgotten it. I found the secret in an old book. We shall not be discovered."

They stopped in front of a magnificent building, not of glass but of marble. It was without adornment and beautiful as a naked sword blade. Unlike the other buildings of the city, it was detached from the crystal roof that capped all the streets, and stood alone in a little park.

Before its portals paced a strong guard, heavily armed, strangely enough, with weapons closely resembling those used in the last wars. Rifles and automatic revolvers were the only mobile killing machines known, for progress in that direction, as in all others, had stopped long ago.

"Come," Eve directed.

They skirted the building under the watchful eye of the guard and entered a warehouse half a block away. Through a long series of storerooms, which were deserted at that late hour, she led him, finally to stop in front of a blank wall. Drawing a pitch pipe from her robe, she blew three soft notes.

"What do you want?" said a hollow, mechanical voice above their heads. Adam (for we shall call him thus hereafter) covered in terror at this new development, but the girl replied slowly and distinctly:

"10, 42, 2, 74."

Slowly, ponderously, a panel in the wall swung back. They stepped into a tiny hall. The door closed behind them.

"A clever safe combination," she smiled. "I hope it doesn't wear out while we're in here. It hasn't been cared for in ages. Wonderful artificers these ancients must have been."

They climbed endless narrow stairs after passing through what must have been a subterranean gallery connecting the warehouse with the birth factory, and at last emerged upon the tiny balcony she had spoken of. They looked down. Far below in the middle of a vast hall pulsed six amber globes of light, arranged about a great globe of crystal.

The central globe, he knew, was filled with germ plasma from which reservoir the human race was perpetuated. From it flowed the eternal stream of life which turned the wheels and manied the factories the world over.

The system, in its essentials, had been discovered in the twentieth century when a surgeon had placed a bit of tissue from the heart of a chicken in a sterile medium, fed it carefully, and kept it in an ideal environment. He and his successors had watched that tissue live for a hundred years. It was growing so rapidly that it had to be watched carefully and trimmed

continually to keep it within the limits of the container.

As the growing scarcity and uselessness of the males, and the antagonism of the "free women" to becoming mothers, had grown in the old days, the legislators hit upon a similar scheme for perpetuating the race by chemical means. It might have been called the last creative work of the human mind.

A small quantity of germ serum was enclosed in the gigantic crystal globe under proper conditions, given the right type of food and allowed to grow, which it did at a tremendous rate. Then it was fertilized by the same methods, which the ancient French physicians, Alexis Carrel, Ebleing and Fische, had used to produce fatherless frogs.

This fertilized ovum, cultivated in embryonic tissue juice, then was allowed to grow in a type of incubator until it developed skin, bones and muscles and was ready to be taken to the nursery, a normal infant.

TWO things the ancients had not calculated upon, however. First, they forgot that the eternally growing germ plasma could not continue the development of the race. Every child produced in this manner was on the same intellectual, spiritual and physical level with every other child. With the development of artificial birth the long increase in human brain capacity had stopped short: in fact, a slow decay had set in, as the serum lost its original virility through the ages.

The second mistake was in creating one gigantic birth factory instead of a number of branches. This resulted in terrific congestion as millions of children yearly had to be started in their growth and then shipped to distant lands where their adolescence was to be spent. In the old days there always had been danger of an uprising among the males to smash the plant, but this had long since passed and the guard about the portal was merely a formality.

Adam was interrupted in his reverie by the voice of his companion.

"You understand, of course, why atavists are forbidden here."

He nodded. "Because in the dark ages they always tried to destroy the life factory."

"But now it is too late for that," he continued soberly. "Children no longer can be produced naturally, even if any one so desired." Then, forgetting his oft-repeated assertion that the world was perfect, the utter blankness into which the race was drifting, swept down upon him like a bank of fog and he added bitterly:

"We are doomed. I see it all so clearly now. There can be no more progress. There can be no more supermen to drag mankind forward in spite of its blindness.

"No," Eve whispered, "but there are atavists to drag mankind backward to a point where it can get a fresh start."

The idea dazzled him. "You mean—we—we could have children—and build a new, clean race?"

She looked down, blushing.

Still trying to grasp the immensity of her suggestion, he turned back to the scene below. "But," he muttered, "we would have to stop all this—stop all!

this, or they would crush us by the sheer weight of numbers." He stared at the softly glowing container below with a new and bitter loathing. Instead of the cradle of mankind, it suddenly had become a race's prison house.

Unwittingly he had leaned farther and farther over the railing of the balcony. Now, without warning, its ancient moorings parted and a large section of the balustrade tottered slowly outward and fell!

He heard a shriek behind him, felt his robe caught as he reeled on the edge and was jerked backward to the safety of the balcony. Unable to tear his gaze from the falling railing, he stared aghast. Would it strike the precious globe and shatter it? Would it? Would it? But the mass of twisted metal fell to one side, crushing one of the many guards below into a horrid pulp of blood and brains.

For a moment there was stunned silence in the hall. Then a babble of shrill voices arose, and a battery of spectacled eyes turned toward the two who clung to their perch on the balcony.

"Atavists! Atavists! Man the doors! Open fire! Guard the crystal!" shouted a captain of the guards, waving her arms in strangely ant-like gestures. Adam found time to marvel at the ineffectiveness of it all; at the foreshortened figures scurrying about below; at their feeble shouts; at his impotence.

An explosive rifle bullet which tore a hole as big as a barrel in the wall beside him, brought him to his senses but, unmindful of his danger, he crouched at the edge of the floor and stared.

Bedlam had broken loose as guards strove to draw an armor plate cover over the precious globe of life serum. Shouts, shrieks, prayers, mingled to make a sound strangely like that of pigs squealing. For it must be understood that the people worshipped the crystal as their only god. It was the giver of life. Long ago they had discarded all idea of personal immortality, but the dream of immortality for the race through the germ plasm still persisted, and the human bees sprang into battle formation, as ready to sting to death anything, any person that attacked their life stream, as a real swarm of bees is to fight for its queen.

Adam was shaken out of dazed horror by his companion. "Quick," she screamed. All her gaiety vanished—her fair face drawn into a mask of fear. "The stairs. It is the only way. They will throw a guard about the district, but perhaps we can squeeze through. Hurry, for God's sake!"

Down those endless stairs they ran—fell—rolled—their robes first in shreds, then lost. Bleeding and bruised they reached the panel.

Eve blew three shaky notes on the pitch pipe which she had held clutched in her hand. "What do you want?" grumbled the mechanism.

"10—2, 2—74," she gasped between breaths.

The panel remained immovable!

Clenching her fists until the blood started where the nails cut into the palms, Eve strove to regain her breath while the precious moments passed.

Finally she tried again—three short notes.

"What do you want?" queried the sullen, impersonal

voice, within which seemed to lurk a note of mockery.

This time she repeated the combination with a voice clear and serene.

Slowly the panel turned.

Down the dimly lighted warehouse alleys they fled. Back of them a voice raised the view halloo. The game seemed ended. The world's last chance gone.

Somehow, nevertheless, they kept ahead of their pursuers. Winding, twisting, dodging through piles of machinery, bales of goods, past unknown bruising, lurking, inanimate objects, which seemed designed to beat out their brains, they finally saw a flood-lighted street ahead.

A bolt of dark cloth caught his eye as they raced for the entrance. "Here," he gasped, tearing off two lengths. "Wrap this around you as a cloak. We'll make it yet. The alarm has not spread this way. They have forgotten to inform the radio controls."

"You go ahead," she panted. "I'm done for. My cell house is back the other way. I'll never get in unnoticed now."

"Come with me," he directed, propelling her toward the deserted, speeding platforms. "They never can find you in the museum. Probably they'll never think to look. And if they do I know every nook and hiding place. Hurry! Don't forget our purpose."

The platform swept them away, but not before they could hear the cell houses bursting into frenzy behind them, as the workers learned of the attack and poured forth to the chase.

Still, for some strange reason, the radio alarms were silent. No one impeded them, as the almost deserted ways swept along.

At the park they leaped to the ground and fled through the dark trees. Wasting no time, he dragged her through the museum entrance, hid her behind a mass of bones that once might have been the skeleton of a mastodon, and, divesting himself of his robe, threw himself on his couch and lay as though asleep.

And not a moment too soon. The alarms were working at last. Loud, raucous and shrill, they blared throughout the city the news of the outrage. "Check all atavists," came the message. "Kill instantly those who are not in their cells. Kill! Kill! The humanitarian laws are in abeyance. Spare no suspicious atavist. Our race must be preserved."

Shaking with fright and apprehension, old Wana, who had pledged her life to keep watch over M-1, but who could not resist taking a nap now and then, peered into his shadowy cell.

He lay at ease, breathing deeply—evenly. With a sigh of relief she closed the curtains. A minute later he heard her reporting to the chief that her charge was in his bed.

THE next weeks were full of formless terror, yet lighted by the growing love between the last man and the woman he now had chosen as his mate. During the long, dusty days, when they prowled the shadowy alcoves together, their love blossomed like a flower.

Endlessly they planned escape, but in their hearts they felt it was useless. Endlessly he toiled through

brittle volumes seeking some method of destroying the hateful life factory but, although there were hints of forgotten explosives, the formulae were meaningless to him. Besides, he had not the materials to manufacture even black powder.

Adam shared his food rations with Eve, without exciting the suspicions of Wana, but he and the girl grew wan and weak from lack of sufficient nourishment. She still hid in the dark recesses of the building, where he would find her waiting for him, with the same gay smile on her pinched face every morning, after Wana had made inspection.

Hand in hand they would wander for hours in the dreary ruin, stopping to wonder at some monstrous skeleton; shouting with delight when they found a beautiful trinket or ancient scarab among the debris of an exhibit.

Or, their arms about each other, they would sit in some far-away sunny corner and dream great, impossible dreams of the world they would create when they escaped.

Somewhere he had run across a scrap from a forgotten poet which kept running through his head as though in mockery:

Ah love! could you and I with fate conspire
To grasp this sorry scheme of things entire,
Would not we shatter it to bits—and then
Re-mould it nearer to our Hearts' Desire."

He quoted it to Eve one day, and comforted her when she burst into tears.

Then, when all seemed lost, when the shrinking of undernourished tissues made them nervous and irritable; when it seemed they no longer could hold out, he found the secret!

In an unexplored subterranean gallery, where cobwebs hung in yard-long streamers, where bats flitted squeaking from rafter to rafter, and where the only light was furnished by a flashlight he carried, they came upon rows and rows of hermetically sealed jars with unfamiliar inscriptions.

Rubbing the dust from several of the labels, he puzzled over them.

Suddenly Eve clapped her hands in delight. "It's ancient English script," she cried excitedly. "See! The kind that was used before the phonetic alphabet was brought into use. Let's see—I know a little about 19th century writing—

"Samples of high ex-plos-ives used in the World War," she spelled out laboriously. "In this group are some of the dead-li-est chemi-cals ever dis-covered by man. The m-a-t-e-r-i-a-l con-tained in the cen-tral can-i-ster is T.N.T. (trinitrotoluene). Do not touch!"

Their lips trembling, they stared at each other over the feeble lamp. "T.N.T.," he breathed. "I've heard of it."

Slowly she continued her translation: "'Enough T.N.T. is contained in this canister to sink a b-a-t-t-l-e-s-h-i-p' What's that?" she puzzled.

"A big floating war vessel, I suppose," he whispered.

"Read on!"

"A slight concussion is enough to explode this material," she continued more rapidly. "For this reason especial care has been taken to seal the canister hermetically, and to protect it from shock in a subterranean room." Then followed instructions for moving the exhibit if it were ever found necessary.

"Do you suppose it has deteriorated?" she pondered.

He said nothing for a moment, then replied: "Suppose it has. It's our only chance. If we can destroy the life factory, it probably will disrupt the air patrol so that we can escape—if we can steal an air car."

HUNGER and the desperateness of their situation forgotten, Eve threw back her splendid head with the old reckless gesture.

"I'll drop the canister from the balcony," she cried. "If I live, we shall escape. I feel it."

But Adam shook his head. "It's my place to do this thing. I will creep over the roof spaces to-night to the warehouse entrance and may succeed in reaching the gallery. One chance in a thousand to escape or overpower the guards—and I am stronger than you."

In spite of her entreaties, he persisted. Finally she stopped trying to dissuade him, kissed him tenderly and said no more.

Gently they lifted the long steel canister and carried it as near as they dared to the entrance of the museum. There they wrapped it in cloths and adjusted straps about it so that Adam could swing it over his shoulders.

"I will ask to take a night flight in the air car," the last man plotted. "Wana will humor me, because I look so ill, and she suspects nothing. Then, before the car arrives, I will take the canister and try to drop it from the balcony. When you hear the explosion, overpower Wana instantly and drive to the entrance of the warehouse. Can you do that?" he queried, noticing her sagging shoulders.

She straightened quickly and the tired lines left her face. "Yes," she nodded. "Wana is old and I am yet strong."

The final arrangements were quickly made. Wana acceded to what she called her ward's foolish whim. He asked her not to disturb him while he took a short sleep and to bring the car in an hour. This also she agreed to.

Then, as midnight approached, he slipped to the entrance, shouldered the grey canister, wrapped his robe about him in concealing folds and crept into the park.

Cautiously he worked his way among the trees, then, when the way seemed clear, crept into a building across the square. Evading the watchwoman, he started mounting the many flights of unused stairs toward the roof spaces. His heart pounded under the unused exertion, but he persisted, resting at landing after landing.

As he had hoped, the door to the roof was unlocked. He pushed it open and crept out upon the city's glassy shield, which extended for miles in all directions, and was broken only by the tops of the greatest of the crystal skyscrapers.

A heavy rain was falling. The glass was wet and

slippery and his load made him clumsy, but he staggered along toward the life factory which, he knew, lay about a mile to the northward.

Hiding under eaves and projections when searchlights from the skyscraper tops swept the blank expanse, and dodging out as soon as the beams passed, he pushed forward doggedly.

At last the tower of the factory loomed before him, across the open expanse of its park. He tried the roof door of the warehouse in which lay the secret passage. It was locked. The legislature was taking no chances with roaming atavists. In fact, he knew that several hundred female retrogrades had been killed since the falling of the balustrade.

In desperation he hammered upon the door with clenched fists. Perhaps someone would investigate. He held his ear to the jamb. Footsteps approached from within. It was a lower level guard.

"Who's there," came the challenge.

"One of the roof guard," he replied in feigned excitement. "There's an atavist at large on the roof spaces. I need help."

Quickly he laid the canister on the roof and crouched beside the door. Would the ruse work?

Unsuspecting, the dull-witted guard turned the lock and stepped upon the roof. He flung himself upon her with fury before she realized the situation. Pinioning her arms so that she could not reach her weapons, he hurled her to the roof. Her head struck sharply against a grating. Her struggles ceased.

Snatching the canister, he leaped inside and locked the door. He would have to chance her reviving and warning the real roof guard.

Not daring to use the elevators, he raced down the stairs, just escaping disastrous falls more than once. By a miracle, he missed the other guards and at last stood before the panel.

Shielding the noise as much as possible, he blew the whistle and gave the combination.

The door swung open and closed behind him. Safe so far!

At last he stood again upon the balcony. Below, the room seemed filled with armed soldiers. A rope ladder dangled from the ledge to the floor hundreds of feet below. Not five feet in front of him, drowsing over her rifle, stood a guard. The secret had been discovered. A second perhaps and she would turn!

Tearing the T.N.T. from his back, he hurled it at the steel armor which still covered the life globe below and said a swift prayer to a forgotten God.

Things happened with amazing swiftness and clarity. The guard in front had heard him. She whirled, her rifle at ready.

THEN—there was nothing. He felt himself drifting in a world without sound or light. At peace. Hours afterward, it seemed, an agonizing pain awakened him into consciousness.

He peered into blackness—a soundless, still opacity. A wild desire to scream came over him. He shouted, but heard no sound. Remembering his flashlight, he tried to find it in the pocket of his robe, only to dis-

cover that the robe was gone and that his right arm dangled uselessly.

With his sound arm he felt about him. Two feet along the balcony his hand descended into space. Back of him the wall had a jagged rent extending as far as he could reach. The truth of the situation dawned upon him. The explosion had been so terrific as to tear away all of the balcony, except a tiny projection upon which he lay.

Fearfully he felt his way along this. Was his escape cut off? He touched the edges of the doorway. Safe! Unable to stand, he crept down the stairs on hands and knees. Half of the steps seemed missing. Once he fell five or six feet. But he persisted.

A sense of power filled him. The life serum was no more, he knew. The top of the life factory dome must have been blown off by the concussion. He owed his life to a miracle. But he had succeeded!

There was one thing more to be done. What was that? His brain reeled and plunged. Escape! Escape! The thought spurred his lagging senses. Down—down—always down. One step—two—a dozen—then a dizzy slip through darkness where the steps had been torn away by the blast. On! On! Into the depths of darkness.

At last he reached the portal. The pitch pipe! Where was it? Gone, with his robe and the flashlight!

Drawing himself together he tried to remember the notes. Were they C, D and A, or S, D and F. He whistled the latter as nearly in the tone of the pipe as possible.

In reply came merely a jumbled whirring, clicking sound. He tried again—C, D and F. This time the whirring was a little clearer and he fancied he heard a blurred corpse of the word "Want."

"10—42—2—74," he answered; then held his breath.

A jarring sound of dislocated machinery was the only answer. The door remained closed!

Frantically he hurled himself against it. With the sudden strength of a maniac he beat upon the edge.

It gave!

Slowly, grinding and jarring, it swung open—an inch—two—six. There it stuck. He forced his shoulder through the aperture. Still more it gave. Once again! Push! It swung wide open and he fell fainting to the floor outside.

Another interval. Then an insistent voice seemed calling.

"Where are you, Adam?" The words rang inside his head. Who was it? He was dead. Why bother? Nothing mattered.

But again the command came: "Hurry, Adam. Hurry. I am waiting. It is Eve. All the lights have gone out. The guard is demoralized. We can escape. You are not dead, foolish one. Come!"

Slowly, with swaying head, he crept on all fours toward the entrance of the warehouse. Even here the force of the explosion had been felt. Bales of goods, parts of machines, mangled bodies were scattered in all directions. Semi-conscious, he squirmed

under the debris—over it—on and on toward the entrance, where Eve, with the air car ready, was bending every atom of her being into that telepathic urge. Once he placed his hand on a cold face and screamed.

He reached the door. Cool air fanned his bleeding forehead. He saw the car. But the effort had been too great. He slumped forward, a sudden heap.

HE recovered consciousness to find Eve bathing his face and talking tenderly to him as to a child. He opened his eyes. His head was in her lap in the cockpit of the air car. It was morning. Behind them the motor coughed gently. He was alive and free!

"Where are we headed?" he breathed as he smiled up at her dear face through the waves of pain which threatened to engulf him again.

"Toward the mountains," she replied, kissing him tenderly. "There we can hide. There we can be happy."

Then, as if she had forgotten the greater purpose of their flight, she was silent for a long moment. At last she added softly:

"There, if we are not discovered and can live like the animals, a new and finer race may yet be born."

As she ceased speaking, the first rays of the rising sun splashed into the cockpit a shower of pale gold.

THE END



In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

AN AMAZING TREATMENT OF MRS. HARRIS' "MENACE OF MARS," EVIDENTLY FROM ONE OF HER ADMIRERS

Editor, AMAZING STORIES:

After having repressed the elemental urge to communicate with you for some eight months and in consequence subjecting my subconscious, as modern psychological parlance catalogues it, to all the blasting turbulence of an unadulterated Hades, to-day I feel liberated from my Freudian complex—divinely disembodied. I feel like the Absolute in Nirvana, so you may expect a little criticism which I hope will reflect to your ultimate credit.

The "Menace of Mars" was a highly plausible tale; it is hyper-imaginative, and as far as that goes it is a tribute to, and not a tribulation of, its creator, Mrs. Harris. It always gives me a stimulus to see an abstruse metaphysical speculation—the abstraction of formality garbed with the innervating robes of imagery. Predatory scientists in their avid quest for brilliantly immutable facts exhibit a slant towards mental fixation. It is just this geometrical rigidity, that is a Janus. While it appeals to the technician and to the philosophic pundit who loves perfection more than life, whose vocation is speculation, to the average human being it holds little attraction save perhaps as the magnitude or incredibility of the fact awakens a parallel response in the *homo sapiens'* construction. Since the normal human being prefers his data of the external world in romantically inconsistent version, it is extremely essential that fictions shall be created about facts in pleasantly possible situations. Man experiences vicariously the emotions of the literary creations he is reading about; for that reason fictions of novel expository import serve to elevate the creature of free will within the confines of mechanism from the sordid level of sense experience and humdrum routine. Inconsistency therefore enlivens life; preventing extreme intellectual specialization which would inevitably end in automatism, thus robbing the one so afflicted of his own individuality. The author of "The Menace of Mars," however, has yet a long and arduous trail to relative, metaphysical perfection; in this she has my wishes for the success of her venture, if the inconsequential efforts of one so addicted may accelerate her progress.

The story evidences a curious admixture of objective dispassionateness and a specious sophistry. I say this not with an arrogated omniscience but merely as a self-evident analysis. It is objectively analytic inasmuch as it excludes human prejudice, even in the story's context, but paradoxically enough when the author is well within the outer fortifications of depersonalized synthesis, she foolishly falls a victim to a common error of the popular mind, that of anthropomorphism, investing the inhabitants of the Martian planet with the attributes of

man, a highly emotional and malevolent one at that. The basic philosophy of the story, though probably not easily perceptible to a superficial scrutinizing, is the jaded husk of mechanism in its most rudimentary form. The story is thus an atavism to which the author has recourse for no apparent reason, when there are so many logical systems that could have been annexed with no extra expenditure of energy. Radiant energy, according to the author, is the end and cause of everything—of course, obviously this is a malignant world, obviously human beings are only excrescences not at all teleological agents, obviously since there is theoretically such a thing as frictionless action, there must be some universal end, which is an all inclusive realization of all potentiality, which even infinitesimal electrons frolicking erratically through an enormous inter-play of energy are striving toward as a common aim—manifestly it is so—didn't the author pre-suppose it? Even assuming that radiant energy was the basis of all existence and a universal harmonic synthesis and the ultimate aim—where did radiant energy receive its primal impulse? Science doesn't profess to know, the religionist pushing back the skein of logic one more step offers God as the creator of all but yet there remains unanswered the insistent query, who or what created God? Did He exist since the beginning, is time non-existent for Him, or is He identical with the toy of the enamored metaphysicist, the Absolute? Logically there was a first cause even if a beginning or any casual force is remotely pre-supposed. Now, since I have pointed out that which I believe to be manifest concerning Mrs. Harris' charming tale, she will readily perceive that metaphysics should be treated by an individual of the trade; perhaps she unconsciously transgressed the limits of scientific. In that case I revoke my criticism and praise her genius.

With the hopes that you still remained physiologically unchanged, I am, Mr. Editor, a booster of AMAZING STORIES internally, externally and eternally.

L. CARDENAS,
610 La Reine Avenue
Bradley Beach, New Jersey.

(Mrs. Harris has certainly won a great deal of favor from our readers. We are glad to see you criticising, because we do not want praise to the exclusion of real appreciation. We appreciate highly your analysis of the story, but as we have said more than once, you cannot look for strict science in the interstellar space flier story. The distances in interplanetary space are so great that unendurable acceleration of speed has to be as-

sumed by a sort of poetic license, but allowing for this and for some other liberties taken with rigid accuracy, much scientific atmosphere will be found in the stories in question. And the trouble (?) is that our readers like them. We are sure that many who have read the stories of this type in AMAZING STORIES have assimilated a lot of the science of the cosmic system of our part of the universe.—EDITOR.)

AN APPRECIATION FROM CANADA

Editor, AMAZING STORIES:

I want to take the opportunity of expressing my appreciation of your publication.

I came to Canada two years ago from Scotland and "discovered" AMAZING STORIES there. Since that time I have never missed a publication.

I do not intend to discuss in detail the contents of your magazine, because such a discussion would involve too much space and time. I will say this, however, I am a librarian's son, and ever since early boyhood have been an omnivorous reader; never in all my experience of books, have I come across any literature in which one could find such a variance of food for thought. That is a strong statement to make but I do not think it can be disputed. In AMAZING STORIES one finds comment made on practically every subject, directly or indirectly, which can bear discussion.

I wish your magazine every success, and here's hoping that by this time next year, people, who up to the present time have only glanced at the covers and said, "Sensationalism," will have had the common sense to look inside and find out for themselves just exactly what they have been missing.

LAIN McHAIRN,
The Pas, Manitoba, Canada.

(We are interested in this communication, because it comes from a librarian's son, and who, ever since his boyhood days seems to have been turned loose upon books, which is one of the best ways of bringing up a boy. This makes his complimentary remarks of special value, because he knows whereof he writes, so we will accept his compliments as valid ones. We have always held that we appreciate brickbats. Of course, unfavorable criticism is very usual in many cases, but we feel ourselves fortunate in getting so little of it. We often think that our correspondents are almost too appreciative of our humble work. It is surprising how few of the letters criticize us unfavorably.—EDITOR.)

FREE TO OUR READERS

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Hornoback

Editor "Amazing Stories"

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A. S. 2

MERNOS

By Henry James

(Continued from page 1017)

have no doubt that you can persuade them to publish the story of it there.

And to communicate with the earth through the mind, I say this to the one who translates the manuscript in this cylinder, if it lands in a country that has a different tongue than that of Germany. I will be in your place in the mind at three o'clock on the day after the notice appears in the paper and will endeavor to communicate with you mentally. Put yourself in a position to receive my thoughts by concentration upon the fact that you can receive my mental message. Should I find a receptive mind, I will tell of the way to use the power of the sun's rays to do the work that electricity does, and more. I will tell of the wonders that I have seen upon the far off planets of different solar systems.

Mernos is to be my future home. I have no desire to return to the earth, except in the mind, to see the discord that rules there. Would that the earth could attain the state of perfection that exists on Mernos. Perhaps my message, if received, may have some effect on bringing that condition a little nearer.

XVI

I HENRY JAMES, again take up the pen. When Professor Margehtes had finished the last line and I had transcribed it, we stood looking at each other in amazement.

"Gott in Himmel!" exclaimed the professor. "Vat a vunderful message."

"Yes," I replied, "and who will believe it?"

"Very few. But we must get it before the world."

He called the *Boston Post* on long distance and told them that a message had been received from another planet. They laughed at him until he told them it was Professor Margehtes, and that name carried weight enough to have them send a reporter. A line in the paper brought out several more, and in the next three days we were besieged by reporters. Some openly scoffed at the strange tale, but others were convinced. They examined the cylinder and the flexible glass and admitted that they had never seen anything like it before.

Headlines were carried in all the papers, and as Professor von Altenberg was a German, the German papers broadcast it in screaming type on the first page which, of course, was what von Altenberg, or Guros Jullo, had requested. Some of the papers spoke of it as the most gigantic hoax ever attempted, but a few took it as a fact and soberly declared that it opened up unheard of possibilities.

The fact that Guros Jullo was to attempt to com-

municate mentally was of interest to all, and several scientists came posthaste to my observatory to see if the attempt would be a success. I had no way of knowing, at that time, on just what day the headlines appeared in the German papers, as there was little communication on account of the war, so every afternoon after it was given to the world, we met in the observatory before three o'clock and waited patiently for something to come. It was the third day after the news had been published in the American papers, and quite a little group was in the observatory. As I remember it, there were Professor Simplon of Washington, Professor Davidsky of Petrograd, Professor Hartbeest of South Africa and a half dozen reporters. The professors of the foreign universities happened to be in Boston at the time the find was published, and came right out to see for themselves.

Several mind-readers and clairvoyants wanted to be there also, but I had denied them that privilege. Why, I do not know, unless it was because I was very skeptical about them.

The hands on the clock dragged slowly, and finally reached three o'clock. Everyone was tensed for the possible message from Guros Jullo. I doubted if he could communicate with the earth-mind, and most of them agreed with me. But Professor Margehtes was sure that he would find a way.

"He is here! He is here!" suddenly cried Margehtes.

All eyes were on Margehtes as he began to speak.

"Guros Jullo, you are here and I feel your presence. We thank you for the message from Mernos."

Margehtes was not alone in the reception of the reply, for I, too, got the mind message from Guros Jullo.

"Thank you for your faith in me," was imprinted on my mind as clearly as if the words had been spoken. "Teach the conditions on Mernos wherever you can. I will return in the mind later."

That was all, but it showed that mental communication could be had with Guros Jullo. Professor Davidsky got a part of the message and was convinced of the truth of the tale, as were nearly all the others. I am now trying to study concentration, in order that I may freely communicate with Guros Jullo when next he visits my observatory. I am in hopes that I can perfect myself in this so that I can learn the secrets of the machines of Mernos and give those secrets to the world. The way is opening for us to learn the secret of harnessing the power of the sun, long the dream of many scientists. Perhaps others will study out this mental communication and get from a Mernesian the ideas that will revolutionize the world. I long to attain mind separation that I, too, may roam at will in the vastness of the universe.

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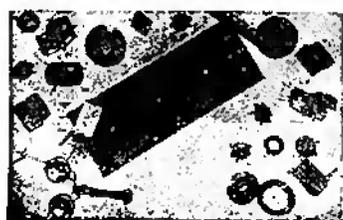
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THE DEADLY MATHEMATICS APPLIED TO "KEMPTONIA"

Editor, AMAZING STORIES:

So many good stories have appeared in AMAZING STORIES that up to now I have refrained from registering any complaints about the poor science—or total lack of it—displayed by a few of your authors. This time, however, I can no longer restrain myself.

In the October issue there is one story in particular that arouses my ire. This is "The Voyage to Kemptonia." Had the author of this atrocity refrained from giving dimensions and figures, things would not have been so bad. Here is the information he gives the reader.

Distance of "Kemptonia" above surface of Earth, 30 miles. Period, 6 days. Surface area: 25,000 acres. Loss of weight of bodies transported from Earth to "Kemptonia," 5/6. Now look at this:

If a body could revolve about the earth at such a distance (in the earth's atmosphere, by the way) it would do so in a period of .06 days. Or, if its period were 6 days, it would be 86,000 miles from the earth's center. If the body was of the same density as the earth (it would probably be much less) an object would weigh only 0.000445 of the amount that it would weigh on the earth; hence a normal man instead of weighing 150 lbs., would weigh only 0.06 lbs. He could stride 6,000 feet and leap 13,500 feet as easily as six on the earth!

The magnifying power of a telescope is given in "diameters," not "magnitudes," and can be "changed instantly" by swinging another eyepiece into position—a power as low as twenty is not practical with a large telescope, and the "light elimination lining" is foolish.

A body the size of "Kemptonia" would be readily visible to the naked eye, subtending, at its closest approach, an angle of over six and one half degrees—thirteen times the apparent diameter of the Moon!

Another author makes a slip in this issue. In "The Menace of Mars," the author speaks of Antares being seen in the West after sunset on April 17. On April 17 Antares would have set several hours before the Sun. It is seen in the southwest after sunset in October. Does this author know that Mars has extensive tracts of vegetation? It has; and, moreover, the "canals" are not cracks, but vegetation.

Having delivered this broadside of brickbats, I will close with a few bouquets. "The Skylark of Space" was excellent—even though the authors did play havoc with the theory of relativity. Dr. Keller's "Biological Experiment" was very fine and contained some beautiful thoughts. "Armageddon—2419 A. D." was very good. "Station X" is one of the best you have published. "The Red Dust"—and the other by the same author—were very fine. All of Wells' I liked, though I have read them all years ago.

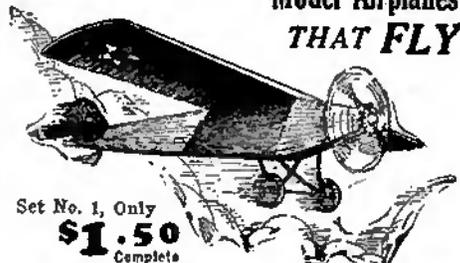
I am enclosing the computations from which the results given in my criticism of "The Voyage to Kemptonia" were derived; but I don't suppose they would interest your readers. Hoping that your authors watch their science a little closer in the future, I am.

CECIL B. WHITE,
Victoria, B. C., Canada.

(This interesting letter is accompanied by a sheet of calculations which we do not reproduce, but are keeping on our file for any of our readers who want to follow this very valuable critique. We are delighted to see that, while our correspondent inclined to pick Kemptonia to pieces, some of our other stories please him greatly. The trouble is that our readers want to enjoy interplanetary stories, and if any one can write one, without indulging in a considerable license of treatment and yet make a good story of it, we will be glad to see his work. As regards the canals on Mars and vegetation of the same planet, we are inclined to regard the exact facts as not yet definitely determined, if they ever will be.—Editor.)

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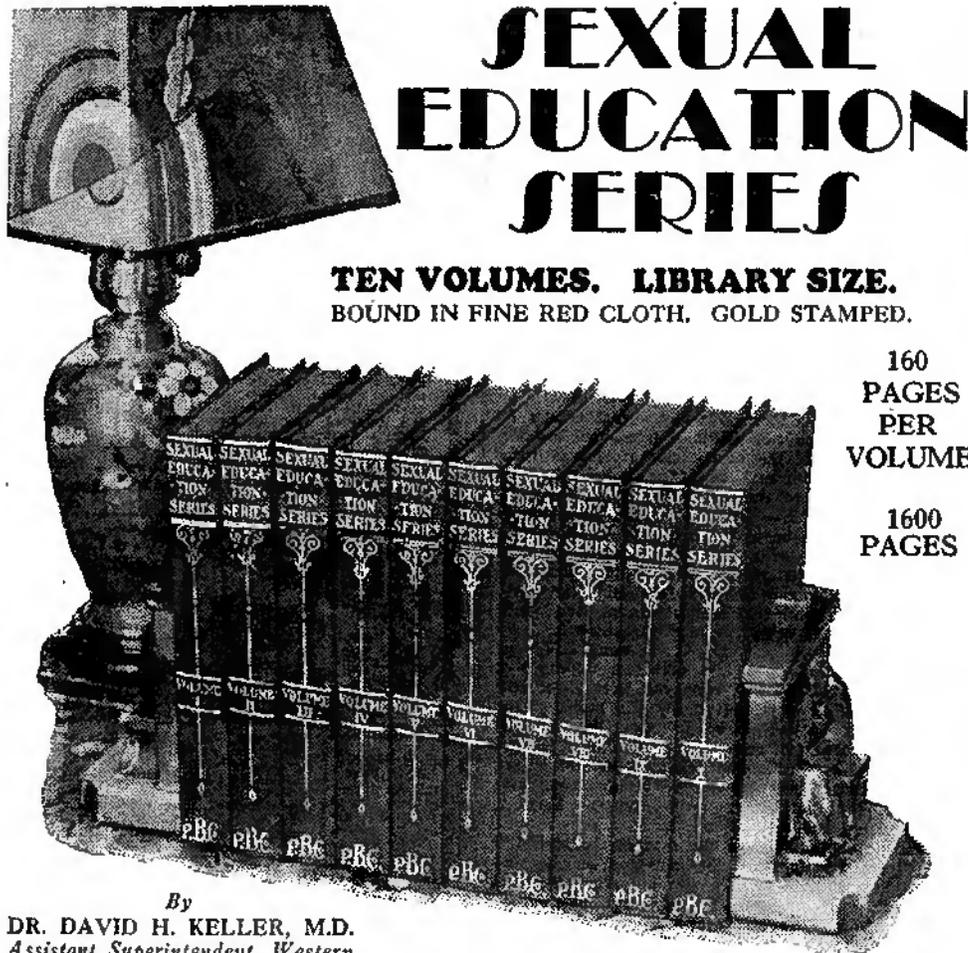


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Editor, AMAZING STORIES:
I have never been able to find a magazine so entertaining as yours. It acts as a stimulant for the brain. What I wonder at is this: Why has not some writer made an interesting story about the electro-magnetic semi-circle around the earth? Now if I could write, I would surely hop to it for I happen to have seen quite a bit of some mighty "queer" things that ought to be good for stories. Here is one: If light was refined by reflectors tuned to a certain light vibration only and then this vibration was amplified and tuned to different degrees of a wave by means of a heterodyne system, you would have a perfect system of making anything of anybody, from idiot to superman. Well what could a real writer do with that?

Regarding letter and answer to Norman H. Moore, of Canada.

Your answer is incomplete and almost wrong. A high tension line can affect a telephone line 20 meters away. If the commutator ripples in both lines (if D.C. current) would synchronize or the generator ripple of the phone line equal the A.C. there would be H— to pay in the phone line. There may also be a current drop in the high tension line due to a dense line caused by high frequency currents set up through this electrical sympathy. But your error is excusable, as very few ever had trouble of that nature in their work and therefore do not know anything about it.

O. C. BERRY, E.E.
(Address missing.)

(We like the point of view you have about our magazine being a stimulant for the brain. You will see in another letter in our "Discussions" columns, that one of our readers was incited to construct a 6-inch reflecting telescope by the effect which AMAZING STORIES has produced. Your suggestions for stories are quite clever. Perhaps some of our authors will use them.

Your statements about the reaction between the high potential line and the distant telephone line are quite interesting. Do you not think that because "very few ever had trouble of that nature" that it must be very rare and unusual? 20 miles is a long way for the action of lines of force to be effective.—EDITOR.)

HOW CERTAIN STORIES HAVE AFFECTED ONE OF OUR READERS

Editor, AMAZING STORIES:

In beginning, allow me to compliment you upon the publishing of such a magazine for such a price. Of course, you have good stories as well as bad stories. Some of them are good scientific while others are not. As to the stories themselves. Among the outstanding stories published by you are: "Columbus of Space," "Skylark of Space," "Island of Dr. Moreau," "Station X," and others of such ilk. Those that did not strike me as well written scientific are "A Story of Days to Come," (too dry and full of detail). There are many scientific mistakes in "The Invisible Man," by H. G. Wells. Here is one. If our friend was able to make invisible a piece of linen, then why, when he has made himself invisible, cannot he perform the same feat upon his clothes? It is not up to me to criticize stories of the poor type, but those of the good type. The "Menace of Mars" is very well written, but I must disagree with the author (as well as Mr. Gernsback) on the theory about which the story is written. We (not the laymen) are all familiar with the electronic theory, no doubt. But, when one attempts to claim that the earth may be an electron of an atom of a gas, liquid, or solid, that is another matter. It is known that the nucleus of an atom is composed of protons and electrons in varying degrees while the element is determined by the number of electrons that revolve about this nucleus. As far as I can see, I cannot understand how one can consider our solar system as a larger atom. Surely, if we consider the sun as a proton and its planets as electrons, you cannot make me believe that protons have an orbital path around the nucleus, for the electrons certainly counterbalance the proton within the nucleus. If it can be shown that the solar system can be considered as a cosmic atom, then will I believe; until then, I'm from Missouri. The facts are against it.

Nothing much can be said about "To the Moon by Proxy," except that it is well written and contains excellent science. "Reprisal" may have been well written but does not meet with my approval. The only thing mentioned there that might be scientific is his explanation of the diverted gulf stream. The same applies to "The Voyage to Kemptonia." The only scientific thing is his mention of the new or extra-terrestrial body. The explanation or description of the characters on that body indicates that they may be Lunarians.

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I say, "More from the pens of B. and Geo. C. Wallis." Their "The World at Bay" is a masterpiece in the scientific field. None of their light rays are new. I have come across the disintegrating ray before and am callous to it therefore. Otherwise, there is no fault, as it is a possibility, although I hope it is not probable. One need not discuss Dr. Keller; his stories are already well known, though I believe he made a mistake in writing the "Menace" series. It may give the colored people some thought. No science at all in "The Ananias Gland"; very much surprised to see it published. All he does is let you know that it does not pay to lie all the time, or tell the truth all the time, but to have a mixture of both. No criticism about the "Moon Men." It is very well written and contains excellent science. "The Eye of the Vulture" is also very good. Among your best stories were "The Man Who Was," and the other, I believe is the "Telepathic Pick-up." The last mentioned is a very good method of explaining the radio principle for a thought pick-up. As claimed by the editor, "The Living Test Tube" idea is an old one. I didn't like it.

In conclusion, allow me to state that I would appreciate more stories of the caliber stated in my first paragraph, among which I number "Station X" as the best.

Paul is very realistic. Let him keep up the good work. His drawings are realistic plus.

SAMUEL GARPINKEL,
202 Avenue M, Brooklyn, N. Y.

(If an author writes about visiting Mars, or of taking a short run off to the moon, he simply has to make a story out of it, and "acceleration" is one of the things, which, from the scientific standpoint, suffers acutely. Our correspondent says that one story is full of detail, but this is the very life of narration and abundance of detail with conversation and dialogue marks the best fiction there is. So do not object to detail; without it the stories would be very flat. "The Invisible Man," dealing with an impossibility is peculiarly open to criticism, and you must expect some very remarkable occurrences in it.

We are certainly inclined to feel exactly as you do about the earth being an electron in a giant atom whose proton is the sun. It is an old story to say that the truth should not always be spoken. This has been worked out in many a story, the point being that we are not obliged to talk perpetually, but that we can leave our destinies to that extent. We certainly appreciate the work you put into this letter. We are glad to hear you admire Paul so much.—EDITOR.)

A VERY FLATTERING TRIBUTE TO AMAZING STORIES AND ITS EDITORIALS

Editor, AMAZING STORIES:

Recently I have noticed several accounts running in the newspapers about a well known scientist who had accomplished another one of the "impossibles" by communicating with Mars via radio. This happened in England during the fourth week of October. The Associated Press and the United Press dispatched many of the stories to the publications here in America and I am sure these stories were printed in nearly every newspaper in the country. For that reason I believe you are already acquainted with the facts (?) of the affair; nevertheless, I am sending along one clipping of one of the stories.

I am anxious to know if this is all a farce or is it really fact. I would like to have you state your opinion and conclusions on this in some future edition of AMAZING STORIES. Perhaps it's all simply a publicity stunt, yet the Associated Press and the United Press News Services are of course wise to such things and I do not believe that the news writers would write such stories if the facts were not proven. (I have had some experience in this line myself.) I would like to see an editorial by you on this soon, in AMAZING STORIES.

AMAZING STORIES has progressed much during the time it has been on the newsstands, I believe, and after reading close to ninety-nine copies of it (is this not right?) I cannot praise it too highly.

It may be of some interest to you to know that AMAZING STORIES has proven its merit several times in our local high school. Excerpts from several of the stories as well as facts from the editorials have been used as references for students in geography, history, mathematics, etc. Indeed, the entire editorial in the November issue was read by the instructor to the biology class, recently. The substance of the editorial was exactly parallel with the work being studied by the class. I wish to congratulate the editor on his work in AMAZING STORIES—the editorials are always interesting.

JOHN M. STURM,
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(We think you are perfectly safe in treating the alleged communication of Mars as an utter absurdity, to use a mild expression! It was given such a publicity in England that international press services had to give it space. While we try to bring out the scientific cast of AMAZING STORIES by the questionnaire, there is liable to be a lot of science touched upon in the Discussion Column. We are glad so many of our readers have expressed warm appreciation of the editorials. We have not yet reached number 99 of AMAZING STORIES.—EDITOR.)

THE TYPE OF STORIES DESIRED BY ONE READER, "PAUL'S PICTURES"—LOVE MOTIF IN A STORY

Editor, AMAZING STORIES:
 I have read your very interesting magazine for almost two years but this is the first time I ever tried to invade your sanctum with a letter. I find the letters from your readers most interesting, for they show what a wide range of tastes prevails among the patrons of AMAZING STORIES.

First, I want to say that your cover designs are original, striking, usually artistic and just what your magazine needs to attract new readers. With the newsstands so cluttered up today with Sexy Stories, Smutty Stories, Western Stories, War Stories, and the like, the contents of which are as alike as peas in a pod, it is necessary for a magazine of the type of AMAZING STORIES to have a cover design that gives the prospective buyer an immediate idea of its contents. I well remember, it was the cover design that led me to buy my first copy of AMAZING STORIES. Had it not been for the picture on the cover, I would have passed it up as "just another one of those magazines" and so missed some delightful hours spent in the perusal of your pages.

Now as to the type of stories I prefer (assuming that you are interested). First, interplanetary stories; they have always had the greatest fascination for me. I can read them for hours and not tire of them. Second, stories of the fourth dimension and stories of advanced science; also stories of the future.

There is just one fault I have to find with your stories, and that is only with some of them. Yours is a scientific magazine, and there are hundreds of magazines catering to the romantic type. Why do your writers write a perfectly fascinating interplanetary or futuristic story, scientifically correct in every detail, and then throw in a girl, usually named Oomlag, or Poo-bah or Sook-sook, or some such juvenile name, who falls in love with the earth hero and does most unconvincing things to show her love; usually getting killed at the end of the story. Cease the bloodshed, let the poor Oomlags, Poo-bahs and Sook-sooks stay out of the story altogether. The people who read your magazine, are, I believe, more interested in the unusual features of the story, than in a certainly mediocre love plot thrown in, as a cook at the last minute throws in a piece of onion to make the stew more tasty. It is quite possible I am wrong, many people have to have some mushy stuff in everything they read, even if it's the Congressional Record.

Now, that is the only kick I have to register against your very excellent magazine and most likely that kick is out of order. So please retain your artist Paul and tell him to make his cover designs as striking as he pleases, and don't be stingy about illustrating the stories.

F. W. SHEPHERD,
 1009 Twelfth St.,
 Huntington, West Va.

(Do you not think that the editor of a magazine, such as AMAZING STORIES, is to be sympathized with, precisely because his readers have such a wide range of tastes, as you express it in your first paragraph? We like your criticisms of our cover designs. Every one has been studied out in order to present the scientific aspect of the story it illustrates, and we see nothing in them to frighten people away. The mere fact that there is so much to be shown on each cover, apparatus, and general details along with the personnel of the story, makes the picture rather full, and sometimes what an artist would call "a rather big spot of color," and we believe that this unavoidable character is what has awakened some unmeaning criticisms. Its cover designs are certainly very distinctive, and differ from those of other magazines. It is interesting to notice that with so many others, you like interplanetary stories, and stories of the fourth dimension. These stories absolutely demand and are entitled to a considerable degree of license, but there will always be found in them a thread of true science. Many generations of readers have liked love stories, so you cannot blame our authors for yielding to some of their readers who wish to read about "love's young dream." However, we doubt if you will find "mushy stuff" in the Congressional Record. We have not the least idea of parting company with the artist, Paul.—EDITOR.)

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A. HONIGMAN, 5116 Clarke St., Montreal, Canada

PROFESSOR POOR AND THE FOURTH DIMENSION

Editor, AMAZING STORIES:

The long put off time to write to your "Discussions" column is at hand. I am a sophomore chemical engineer at the University of Michigan, and have been reading your publications, since the days of the old "Electrical Experimenter." I have all the copies of your magazine which have yet appeared except two or three, and on an additional sheet enclosed here you will find my orders for them, and for the renewal of my subscription.

I have so much to say that I hardly know where to start, so I will note the various things as they come to me.

The first and most important item is this: I believe that if your covers were just a little less *fantastic*, you would have a much larger circulation. I have repeatedly had people, *who had never seen the magazine before*, take one look at the name and cover design, and immediately say, "What do you read that imaginative trash and bunkum for—what good is it?" I have even seen people on the buses look at a copy under my arm and openly give me a pitying look. I have noticed that some of your other readers agree with me entirely on this point. (I do not say that your artists are not good—on the contrary, I think they are excellent, but their efforts are merely a little too brilliant.)

By all means let us have the pleasure of reading some more stories by Murray Leinster and G. McLeod Winsor—I think that the latter's "Station X" was the best story you have ever published, with "The Land that Time Forgot," "The Color Out of Space," and "Treasures of Tantalus" close behind it. I have also much praise to offer your doctor-authors, Drs. Keller & Brener, and Mr. Bob Olsen for his plausible explanation that the fourth dimension *could* exist, in "Fourth Dimensional Surgery."

I am much in favor of having the QUARTERLY—perhaps in time AMAZING STORIES will be a semi-monthly magazine. Do you intend to publish another annual this summer, or have I missed it?

The comments of so many readers on the theory that "time" is or is not the fourth dimension amuse me greatly. Although I agree with H. G. Wells when he says that an "instantaneous cube" could have no real existence, nevertheless I would rather take the viewpoint of Bob Olsen in "Fourth Dimensional Surgery."

If one is going to start adding other "dimensions" to the linear ones, why not group all the linear dimensions under the one word "position?" Then the other necessary "dimensions" could possibly be taken as "time" and "mass." For example: an object such as a chair could not exist without being located in some one place; it could not exist without a definite size and weight, nor could it exist if it had no time of existence—that is, if it never existed. I realize that I have mixed up my meaning of mass by putting in the words size and weight—it would have been simpler to just say mass. Of course, I am not saying that this is my "pet" theory—it is merely my way of showing that it is hard to say which are "dimensions" and which are not.

In your editorial comment on Mr. J. A. Maple's letter in the September issue, you quote something from Prof. Poor's "Gravitation vs. Relativity" which I question. "... as the speed of my room increased, my desk clock would run more and more slowly, each tick would represent the passing of an hour or a day ... of our ordinary earthly time ... at the end of half an hour by my clock, I would have traversed the depths of space and returned home ..." Prof. Poor then goes on to say that he would find that time on the earth had progressed several centuries while it was only a half hour to him. Now, the ordinary span of human life is somewhat less than 100 years—why then would he not die of old age during his "half hour trip?" On the other hand, if he in some manner managed to prolong his life and did return to the earth after several centuries, surely the effects of traveling through space must have slightly injured his clock, as it only registered a half hour.

I realize, of course, that if what Mr. Einstein says is true, that time varies with motion, that an hour is not always an hour, then I am wrong; but otherwise I cannot understand it.

HARRY H. FURCELL,
16583 Lawton,
Detroit, Mich.

(Our correspondent asks for enlightenment, and we in our editorial modesty hardly feel that we can give it to him. The minute most people take up the fourth dimension and Einstein, they are apt to find themselves submerged. Many efforts have been made and books have been published to explain relativity, but with little success from the popular standpoint. Slonson has even gone so far as to give a chapter on "Einstein in Words of One Syllable." We think Einstein is hard to elucidate, even in polysyllables.—EDITOR.)

I Was Afraid of This New Way to Learn Music

— Until I Found It Was Easy As A-B-C

Then I Gave My Husband the Surprise of His Life

"DON'T be silly, Mary. You're perfectly foolish to believe you can learn to play music by that method. You are silly to even think about it. Why, it claims to teach music in half the usual time and *without a teacher*. It's impossible."

That is how my husband felt when I showed him an ad telling about a new way to learn music. But how I *hated* to give up my new hope of learning to play the piano. When I heard others playing, I envied them so that it almost spoiled the pleasure of the music for me. For they could entertain their friends and family ... they were musicians. I had to be satisfied with only hearing music.

I was so disappointed. I felt very bitter as I put away the magazine containing the advertisement. For a week I resisted the temptation to look at it again, but finally I couldn't keep from "peeking" at it. It fascinated me so much that finally, half-frightened, half-enthusiastic, I wrote to the U. S. School of Music—without letting my husband know.

Imagine my joy when the lessons started and I found that they were as easy as A. B. C. Why, a mere child could master them! My progress was wonderfully rapid and before I realized it, I was rendering selections which many pupils who study with private teachers can't play. For thru this short-cut method, all the difficult, tiresome parts of music have been eliminated and the playing of melodies has been reduced to a simplicity which *anyone* can follow with ease.

Finally I decided to play for Jack, and show him what a "crazy course" had taught me. So one night when he was sitting reading, I went casually over to the piano and started playing a lovely song. Words can't describe his astonishment. "Why ... why ..." he stammered. I simply smiled and went on playing. But soon Jack insisted that I tell him where I had learned ... when ... how? So I told of my secret.

One day not long after my husband came to me and said, "Mary, don't laugh, but I want to try learning to play the



violin by that wonderful method. You certainly proved to me that it is a good way to learn music."

So only a few months later Jack and I were playing together. Now our musical evenings are a marvelous success. Every one compliments us, and we are flooded with invitations. Music has simply meant everything to us. It has given us Popularity! Fun! Happiness!

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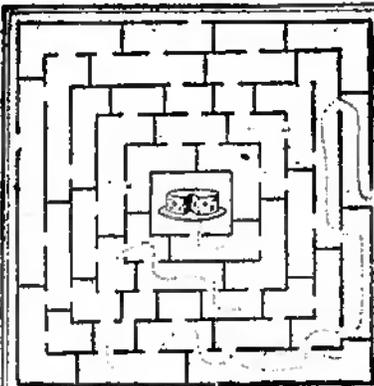
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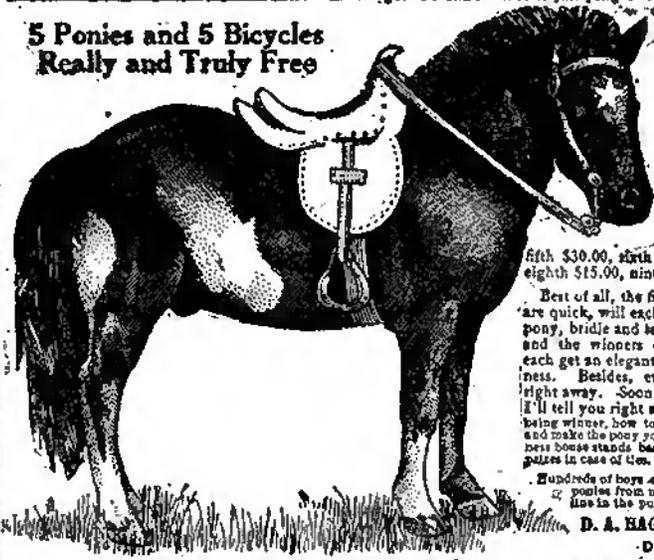
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Boys and girls! Here's a chance for you to help this pony get a piece of cake, and get a real live Shetland pony for your own. The pony sees the piece of cake in the center of this puzzle, but he doesn't know how to get it. Can you show him a way? Just draw a line from the pony's nose, through the gates in the fences until your line reaches the cake at the center. If you can find a way for the pony to get the cake without jumping over fences, cut out the puzzle and send your answer to me quick.

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To make more friends for my company among the boys and girls, I will give \$415.00 in cash prizes: First prize \$150.00, second \$75.00, third \$50.00, fourth \$35.00, fifth \$30.00, sixth \$25.00, seventh \$20.00, eighth \$15.00, ninth \$10.00 and tenth \$5.00.

Best of all, the first five winners, if they are quick, will each get a beautiful Shetland pony, bridle and saddle, absolutely FREE, and the winners of the last five prizes will each get an elegant bicycle free, for promptness. Besides, everybody can get \$1.00 right away. So as you send your answer I'll tell you right away how near you are to being winner, how to get the \$150.00 first prize, and make the pony yours. A big \$250,000.00 business horse stands back of this offer. Duplicate prizes in case of ties.

Hundreds of boys and girls have already won 25 ponies from me. You be next! Draw the line in the puzzle and send it to me today!

**D. A. HAGEN, 71 Popelar Bldg.
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Here's news for puzzle fans! C. W. Francis, A. F. Holt, Miss Leola Markus won from \$1,800.00 to \$3,500.00 each in our last puzzles. Here's the new one. Here are twelve pictures of Charlie Chaplin, the world famous United Artists' star. No, they're not all alike, even though they look alike. Eleven of them are exactly alike, but one and only one is different from all the others. That's the real Charlie Chaplin. The difference may be in the tie, shirt or hat.

Find the "Different" Picture

360 prizes totaling over \$7,900.00. \$3,500.00 to winner of first prize and duplicate prizes in case of tie. If you can find the "different" figure you may be the one to get this great prize.

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If you find the real Charlie Chaplin we will send as soon as correct answer is received certificate for \$1,000.00 to add to the first prize of \$2,500.00, if you win, and directions for getting largest prize. Over \$30,000.00 in prizes already given to advertise our products locally. No cost or obligation. Nothing to buy now, later or ever. Everyone rewarded if actively interested.

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"THE FIFTH DIMENSION" AND THE EDITORIAL "AN AMAZING PHENOMENON"

Editor, AMAZING STORIES:
I have just finished reading "The Fifth Dimension" and your interesting Editorial "An Amazing Phenomenon" in the December number.

While I quite agree with you regarding our return after death to human form, albeit in minute particles widely distributed as to time and personnel, in the bodies we will inhabit, I far from agree with you in your idea that we will retain enough memory cells in one piece to have even a fraction of a thought that we had in a previous existence.

Your idea is too fantastic and far-fetched for so simple a matter, particularly the instance to which you refer, that of the scene from the train. Inasmuch as steam trains are a relatively modern invention, you could hardly have seen that bit of landscape from exactly the same angle a thousand or five thousand years ago, even had there been no changes in the scene.

I have often had the same impression and have applied a theory I heard of as a boy (I think it was a surmise of Henry James, though I forget just where I got it), and I have always found that the so-called phenomenon occurs under certain definite rules. I am either very tired, or bored, or under the influence of a monotonous sound or movement or both, such as the joggling of a horse, the rumble of a train, etc. In other words, I am half asleep!

And there is your answer. We lapse into momentary naps under such circumstances, then start awake. The trend of thought has been broken, and the impression we had a split-second ago returns as a memory. Test this out the next time you are conscious of this "phenomenon." In about thirty years' experience, I have found it to fit the circumstances, in both my own case and in those of all others who have related similar cases to me.

I have read your magazine since the first edition and hope that you will continue the good work. What a relief it is to see it on the newsstand amidst all the "True-what-not" trash. I think whatever gods there be that at least one publisher is not afraid to label his wares "fiction," no matter how amazing!
Wm. S. WENSLEY,
Alhany, N. Y.

(Your letter embodies a very nice bit of psychology, and your theory is very interesting. The letter tells its story so well that we hardly can add any comments to it. Many of the phenomena which the credulous impute to spirits are due to the action of the subconscious in ourselves.—Editor.)

LIKES AND DISLIKES

Editor, AMAZING STORIES:
Although I am not an habitual letter writer, I am writing you now to tell you what I like about AMAZING STORIES, and what I don't. Because if I don't, you're liable to take the advice of some of those others who write to you and I don't agree with all of them. I'm giving you my views in self-defense.

In a general way, I like my scientific short. Long-winded stories make me lose interest, and the more short stories you have the better I like the issue. The December number was particularly pleasing to me on this account. It's hard to pick the best story out of that issue. I hesitate between "The Metal Man" and "The Appendix and the Spectacles." "A Flight to Venus" is fully as entertaining in parts, but only in parts. The irony of this story lifts it a bit above the ordinary. "The Space Bender" is a fine bit of sarcasm, and an ingenious exposition of Fourth Dimensional ideas. However, I can NOT agree that a thin sheet of paper can be considered two-dimensional. Nothing can be so thin that it isn't three-dimensional—not even the thinnest sheet of gold leaf, and I can prove it to you with a good micrometer. If there are two-dimensional objects, we have no means of perceiving them, any more than a four-dimensional man could perceive us. (Wrong. Shadows are perfect two-dimensional objects.—Editor.) However, I don't let such reflections spoil my enjoyment of a good "dimensional" story.

I enjoyed ten minutes of reading and hours of pleasant contemplation from "Out of the Sub- Universe." That's what I call a story with a kick. Of course some objections occurred to me. For instance, the time it took to raise the little people to normal size must have been centuries to them. We can only assume that the process of changing their wavelength temporarily arrested the vital processes, and that suspended animation prevented them from aging rapidly.

Here's another question: How did the Professor keep his ultra-cosmic ray focused on one spot of Electron, which was probably revolving and whirling on its orbit at the same time. Don't you suppose it is likely that the body of the man and woman, and their descendants had some subtle attraction for the ray which nothing indigenous to Electron would

have? As a large number of them were congregated at the appointed place, a spot on the planet already polarized by the initial impingement of the ray, it is rational to assume that the ray would be again drawn to them.

In further proof of this theory let me cite that nothing was brought back except the bodies of the people. Had the temple been susceptible to the ray from outside, it would have been brought back too. One must further assume that their clothing, being in intimate contact with them, participated in this susceptibility. Possibly the temple did start to come up, but being less susceptible, came more slowly, and was trampled underfoot by the rapidly growing mob.

I also liked that story, "Monorail." While there's nothing really extravagant about it, it's a good story as it is. It isn't too long, and it has action. "The World of the Giant Ants" gets my vote too, even if it was rather long. "The World at Bay" would have pleased me better if it had been boiled down to about half its length and run in one issue.

I notice that a lot of readers liked "The Face in the Abyss." Lest you think it's unanimous, let me say I didn't like it. It's mystification, not scientification—more in the order of a fairy tale.

I like H. G. Wells' stuff, but seem to be out-voted. I don't care for Jules Verne, because he's out of date. There are some other stories which I wanted to commend, but they've slipped my mind now, and I no longer have the magazines, as I gave them to friends here and there for missionary purposes. They get the first copy from me for nothing and some of them buy their copies after that.

I can't find any fault with the covers, the paper, the size of the magazine, or the kind of neckties the editor wears. It's all right with me, and I grudge every issue, monthly, quarterly and annual, as they appear.

N. R. NOTHEM,
Y. M. C. A. Hotel,
Chicago, Ill.

(Paper is used in describing two-dimensional space, as a sort of model only, so your criticism does not apply. We all know that a sheet of paper has three dimensions.)

It certainly is great praise for a story to say that its reading took less time than did the subsequent contemplation of its task and ideas. While they must involve impossibilities, we find that our readers like interplanetary stories, and we see you are no exception to the rule. We often feel that some of our stories are too short, but you take quite the opposite view. Your theories of the actions described in "Out of the Sub-Universe" are quite ingenious, and really indicates that the story had considerable depth.

"The World of the Giant Ants" is written by a very distinguished explorer, who is the author of a great many very entertaining popular scientific books.

We thank you sincerely for your good wishes and appreciation of our humble efforts.—EDITOR.)

AN OUTLINE OF ARTISTS

Editor, AMAZING STORIES:

Why this great furor over Paul's covers and other illustrations? They may not be at the pinnacle of modern art, but they are certainly technically O. K., and there are very few present-day artists who can combine technical perfection with artistic taste. Charles Livingston Bull, with his really miraculous animal pictures, Paul Bransom to a less extent, and Otto Anton Fisher, whose sea drawings are usually perfect pictures of the ships he means to illustrate, are almost the only exceptions of which I know.

True, his human beings sometimes appear to be rather queer, but then, I have seen men in Schenectady who were almost their exact duplicates during the last week (I took particular notice), and as to the future, who can say? The past he has almost never dealt with, so there's no kick coming there. Too, his animals are somewhat strained, but there are exceptions, great ones. Compare the horse in Kaw's "Time Eliminator" and the dinosaurs in "The Land that Time Forgot" with the blasts of the second instalment of "The Skylark of Space" or the dinosaurs from "The Way of a Dinosaur." What a difference! His horses are without exception rather awful, but what is a horse (they're devilish hard even to copy) when there are Martians for the asking with no valid excuse for criticism? Keep it up, Paul, you're growing with every issue.

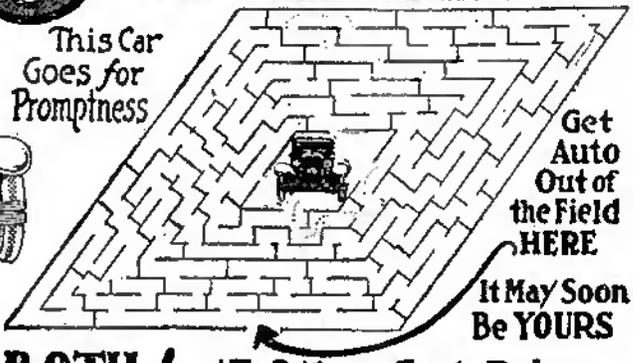
As to covers, they are startling, but again, there are exceptions. The February, 1928, cover, illustrating "Baron Münchhausen" is, to my mind, the best you've had. More like that! Following this in order of preference are the May, 1926, Wells' "Crystal Egg"; the November, 1928, "Bruceekel's Moon Men"; the December, 1927, Bauer's "Below the Infra-Red"; and October, 1927, Cumming's "Around the Universe." The covers illustrating "The Green Splotcher" (March, 1927), "In the

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The hook cited will serve to introduce one to a very fascinating hobby, even if one does not care to go into astronomy very deeply.

I am not connected in any way with the publishers of "Amateur Telescope Making." My only wish is to see others become interested in astronomy.

HAROLD A. LOWER,

1032 Penn Ave., San Diego, Calif.

(Perhaps it is over-conscientiousness on our part, but we sometimes feel as if we did not do enough on the scientific side of our field of work letting the literary part crowd out some of the scientific part, but a letter like this goes to show how much good we really are doing. AMAZING STORIES has started a man into astronomy who has actually ground up a 6-inch mirror for a reflecting telescope. This letter to our mind is an impressive tribute to AMAZING STORIES. Some interesting articles on the construction of astronomical telescopes, lens grinding, polishing and silvering, with full illustrations, have been published in SCIENCE AND INVENTION. We give a few titles with references:

Building Your Own Telescope, January, 1927; An Inexpensive Telescope, May, 1924; High Power Telescope for Your Garden, Sept., 1923; A Home-Made Telescope, July, 1922; Build Your Own Reflecting Telescope, Part I, December, 1922; Part II in January, 1923.

(The February 1929 issue of SCIENCE AND INVENTION also contains interesting articles on telescope building.—EDITOR.)

THE EDITORIAL "AN AMAZING PHENOMENON"

Editor, AMAZING STORIES:

This is chiefly in reference to your editorial in the December issue of AMAZING STORIES, entitled "An Amazing Phenomenon." I would criticize, although mayhap, without apparent justification.

I have been a reader of AMAZING STORIES since it was first introduced, and I have found your editorials almost uniformly to my liking and certainly rich in that expression of intelligent insight that characterizes the thinking man, but with this one, I feel that I must find fault.

You offer what you call a theory that tends to explain the supposed facts of what is commonly known as "Premonition." That it may appear fantastic is no ground for objection, and as a basic working hypothesis it might be accepted subject to the derivation of a theory, but haven't you overlooked a few rather important details? To enumerate: You illustrate by using an almost classical example of paramnesia; the intricate structure of a brain cell might, in the case of cannibals, or were the deceased of our race used to fatten the pork, which we, in turn, consumed, maintain something of its original structure, but when one considers the transformations through which it must go before it, or any of its parts might enter into another human system, it seems most incredible that it should still retain the memory impressions of five thousand years ago or of five months ago.

Experiment, with which I have been associated, has tended to prove that although light and color sensations are telepathically transmissible, that form is not, except possibly in those unusual cases of ideation or thought transference, the very existence of which is not too well proven. That would tend to weaken a telepathic explanation.

It has been my experience, as it has been the experience of most people, to have had at one time or oftener, that feeling of having observed a scene previously. Often enough this can be explained by lag in the perceptive speed in one of the hemispheres of the brain; sometimes that is not so applicable. In my own case I have generally been able to trace it to a still more comprehensible cause. A fair familiarity with a variety of things together with a reasonably profound acquaintanceship with the commoner laws of geology, it follows that a general condition being of a certain nature, the trend of particular items will generally be in type. The same could hold true of similar cases relative to other subjects, and it seems most reasonable to suppose that the causes of this phenomenon are rather immediate to it than otherwise.

Of premonition, that is different. Your remarks



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regarding it and coincidence appear to cover the subject quite well, until there is evidence of a more concrete nature at least, and of which I may have something to offer at some other time.

The December issue of AMAZING STORIES is as usual, excellent. As to the covers, they are all right, and possibly it doesn't occur to some of your critics that everybody is not of the type that judges the contents of a book by its cover. Some of my most treasured volumes have no covers whatever. Paul is all right, the paper is satisfactory and anyone who doesn't like the stories doesn't have to read them.

DAVID MILLS,
Box 175,
Truckee, California.

(The editorial you refer to has certainly attracted our readers' attention. Yours is the second letter we have published about it. We referred in our comment on another letter to the subconscious self. This has much to do with such things as spirit writing and the Ouija board, which in their manifestations are due to nothing more occult than the same subconscious self. We have much to learn about all these phenomena, which really in many cases elude our powers of explanation.—EDITOR.)

A TRAVELER REPORTS CITIES WHERE AMAZING STORIES COULD BE BOUGHT

Editor, AMAZING STORIES:

I have just finished reading the September issue of AMAZING STORIES, and still maintain my record since the original first one. Through the short years while AMAZING STORIES has truly grown amazingly, it has been my one magazine pal; North, South, East and West alike. I first saw your magazine at a friend's house in Providence, R. I., then I was so "het up" over this new and unrivaled magazine that I got the next three numbers in Rhode Island, and continued in Connecticut. The Annual accompanied me from New Haven, Conn., to New Orleans, La.—and then to Houston, Texas. Issue after issue found me in various parts of the country—but they always found me or I found them. Once again in Little Rhody I got the September issue and here I am.

I have been called several uncomplimentary (very) names for being such a devoted reader, but upon insisting that they prove their point, they usually say, "Let's take a look at it anyway," and then they get interested (however reluctantly) and the local newsdealer has to order a few more copies to meet the demand. I am not going to ask a commission for this "campaign" of mine, but within two weeks in one Texas town I had the local demand of AMAZING STORIES jump from 0 to 3.

My mother was one of the severest critics in my choice of "uplifting literature," but one night at the table I was telling a friend of mine about "The Comet Doom" and "Ten Million Miles Sunward," and the "Mrs." pricked up her ears, and asked where I had gotten all that information. Triumphant I told her that it was obtained from no other source than that "uplifting literature" she scoffed at. She said she'll have to start reading, and she, being a devoted reader of Edgar Rice Burroughs, I started her on the "Master Mind of Mars," which in my opinion is about the best story I've ever read, and I've read widely—that one surpasses even Burroughs' former stories (in book form) of his Martian Creations and the Phoenician character of his John Carter.

Criticisms should come next, and usually your critics start with No. 1 and tear apart every piece of the magazine, regardless of the hard work of the editors to please them, but such is life. Personally, I am not going to criticize for the very simple reason that I have no criticisms to make. Absolutely none.

If I may—I should like to add another wreath to the now swelling pile at the feet of Mr. Paul, your artist. Mr. Paul is unusually adept at picturing the things "as is"—and that alone is a point many artists never attain.

I shall look forward to more of Merritt's Stories, and tell E. R. Burroughs (if he still survives) to go to Mars and get some more "dope" on the immortal John Carter.

RAY E. WARNER,
14 Bank St.,
Pawtucket, R. I.

(You have certainly been unflinching in the interest you have shown in our AMAZING STORIES, and such interest is most flattering. You have given a list of places all over the United States where you have found the magazine. This we do not publish, but it is enough to tell our readers that it covers cities in a number of states, from Texas to Rhode Island. You say you have no criticisms to make. Our own criticism on your letter is due to our modesty; we feel that you are really too flattering and we certainly are delighted that you are so pleased by our efforts.—EDITOR.)

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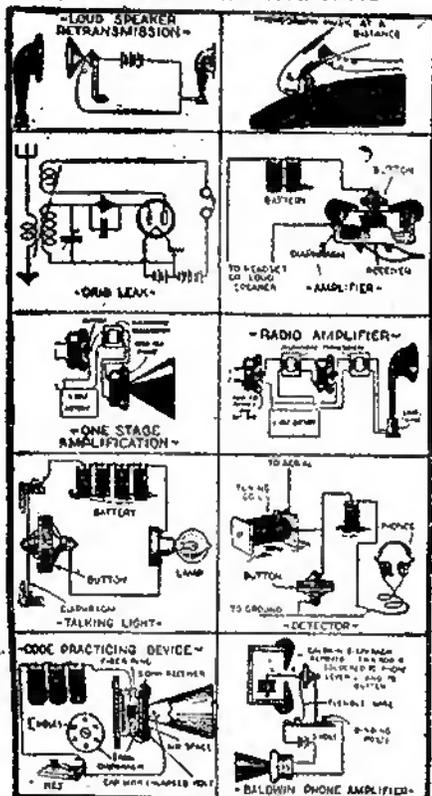


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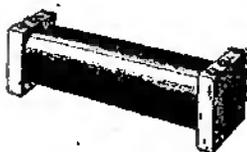
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FLATLANDERS AND THE THIRD DIMENSION; THE THREE DIMENSION MAN AND THE FOURTH DIMENSION

Editor, AMAZING STORIES:

I have just re-read Bob Olsen's great story, "The Fourth-Dimensional Robberies," and the more I think over the matter, the more I am convinced that it should be classed with Dr. Mentivoso. While the puzzlement in the latter is from the man-made differences in time, in the former it is merely a play on perspective.

Another thing, Olsen says, in demonstrating his point, that if a "Flatlander" of two dimensions, would use a specially constructed forceps, it could extract an object from a three dimensional prison (in this case a rubber band). Now it stands to reason that a Flatlander could not use above the two dimensions or even grasp the handles of a three dimensional forceps. To turn Olsen's reasoning against him, how then could a three dimension person deal in the fourth dimension?

In regards to the cubes, The author says that taking two one-inch cubes, he moves one of them one-inch into the fourth dimension so that it is inside of the other. (If it were not, it would coincide.) Now has he really moved it into the fourth dimension? No! He has merely condensed it into a smaller space, and in reality made smaller its three dimensions.

To close: Why should we take one more theory (Einstein's) as being correct? Doubtless he had a great intellect but still he is human and "to err is human." Does it not seem that everything can be explained perfectly with only three dimensions?

JAMES PHILLAN,

108 Charles St., Edwardsville, Ill.

(We think that perhaps it is a compliment to be classed with Dr. Mentivoso, for the titularly "mendacious" gentleman in question, in spite of his lack of veracity, certainly made people think, and your letter shows that you have been giving considerable thought to the subject of the fourth dimension. As regards your last query, everything cannot be explained with only three dimensions, and we firmly believe that gravitation or the ether could not be explained with any number of dimensions. Einstein's laws are not universally accepted by any means, although some of the highest authorities have adopted him enthusiastically.—Editor.)

PRECOGNITION DREAMS FORECASTING THE FUTURE

Editor, AMAZING STORIES:

In his story, "Unlocking the Past," Dr. David H. Keller, in speaking about inherited memory, has this to say, "As a hypothesis, this is hard to prove." All of us have experienced the peculiar psychic sensation in reading a book that somewhere, sometime, we have read it before. Or we feel we have performed a certain act before, or visited a certain shop in a European city when we know positively that this is our first trip across the Atlantic. When these sensations are subjected to careful analysis, they become difficult to evaluate and can be put to no scientific proof.

The best explanation of the e-sensations or feelings is, in my opinion, that given by J. W. Dunne in his book, "An Experiment with Time." Mr. Dunne claims "That dreams—dreams in general, all dreams, everybody's dreams—are composed of images of past experience and images of future experience blended together in approximately equal proportions." He shows how any one can verify this statement for himself. Mr. Dunne says, "that sudden, fleeting, disturbing conviction that something which is happening at that moment has happened before, has happened before—in a dream which eludes precise recollection."

No longer can precognition or premonition be denied, as many scientific men do deny it. Deny, not because it is not a fact, but because it does not square with their preconceived ideas. Perhaps science doesn't know it, but precognition is a challenge to its theories. Precognition being a fact, science must change many of its theories.

WM. CROCKER, Prescott, Ariz.

(We do not believe for a moment that dreams can foretell the future, and we would suggest that you take up the subject with the editors of SCIENCE AND INVENTION. Dreams are now attributed to the recollection, conscious or subconscious, of things that have happened in the past. We certainly have no hesitation in denying precognition and premonition, except as far as they may be indicated by experience of the past, giving a guess at what course one may pursue in the immediate future. A very few years ago, everyone would have pronounced wireless in this present development as impossible and any conception of it corresponding to what has been done and what is being done every day, as ridiculous. This also applies to Television. But do not believe in precognition. Premonition is attributable to a guess based on experience.—Editor.)



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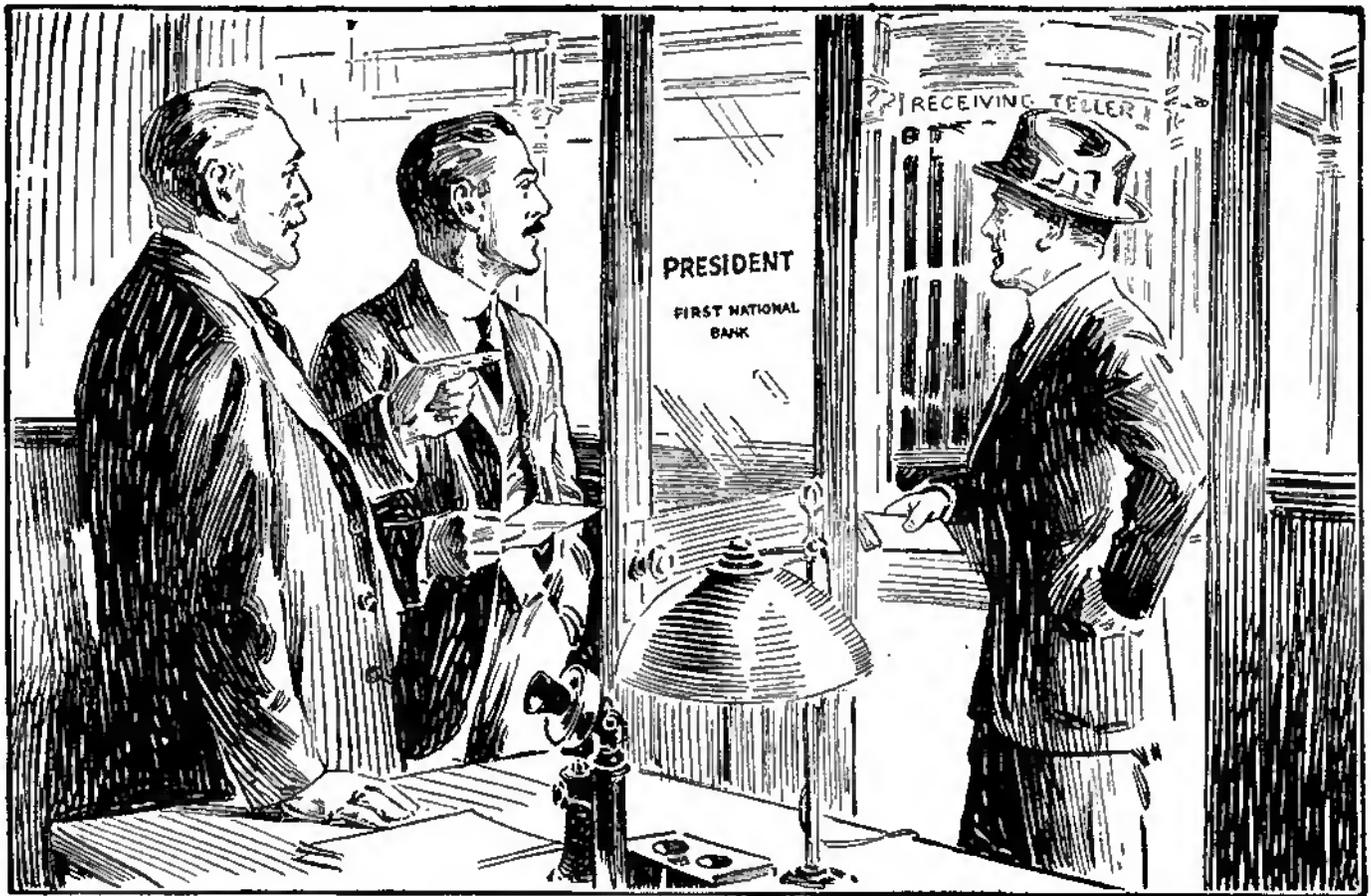
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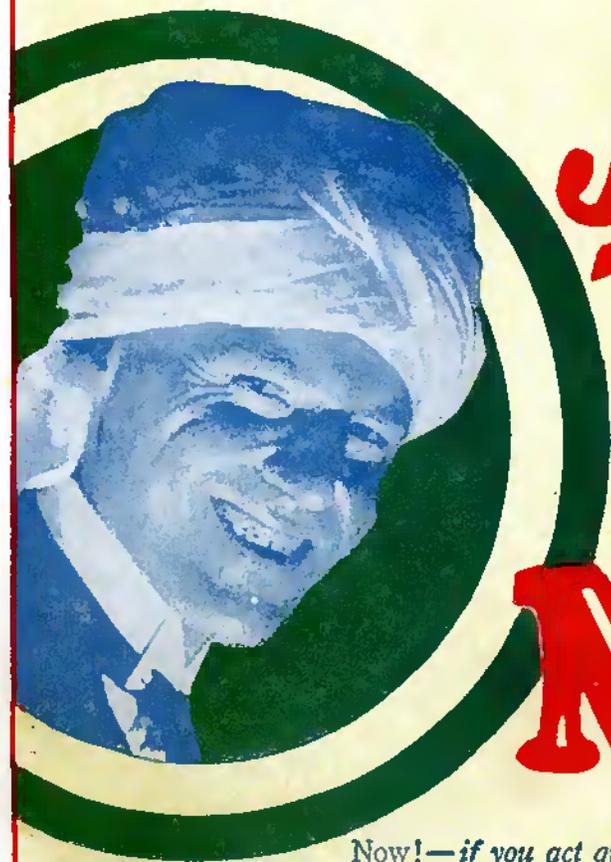
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