

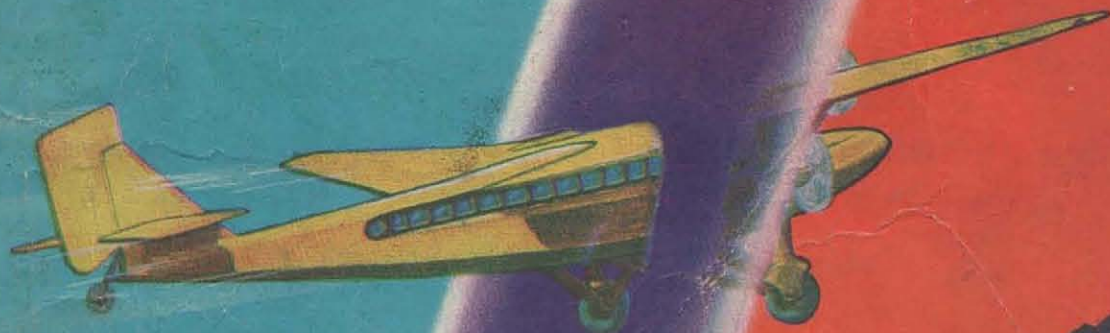
ADVENTURES OF FUTURE SCIENCE

WONDER Stories

May



HUGO GERNSBACK Editor



"THROUGH THE PURPLE CLOUD"

by Jack Williamson

Other Science Stories
In This Issue

"UTOPIA ISLAND"

by Olin von Hanstein

THE BEASTS OF BAN-DU-LU"

by Ed Earl Rapp

"WORLDS TO BARTER"

by John B. Harris





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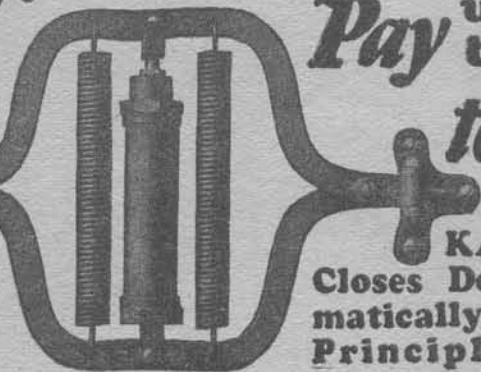
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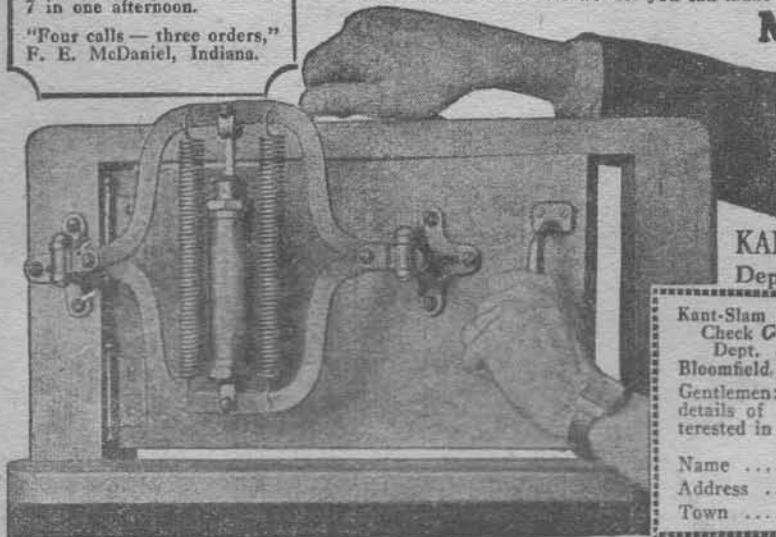
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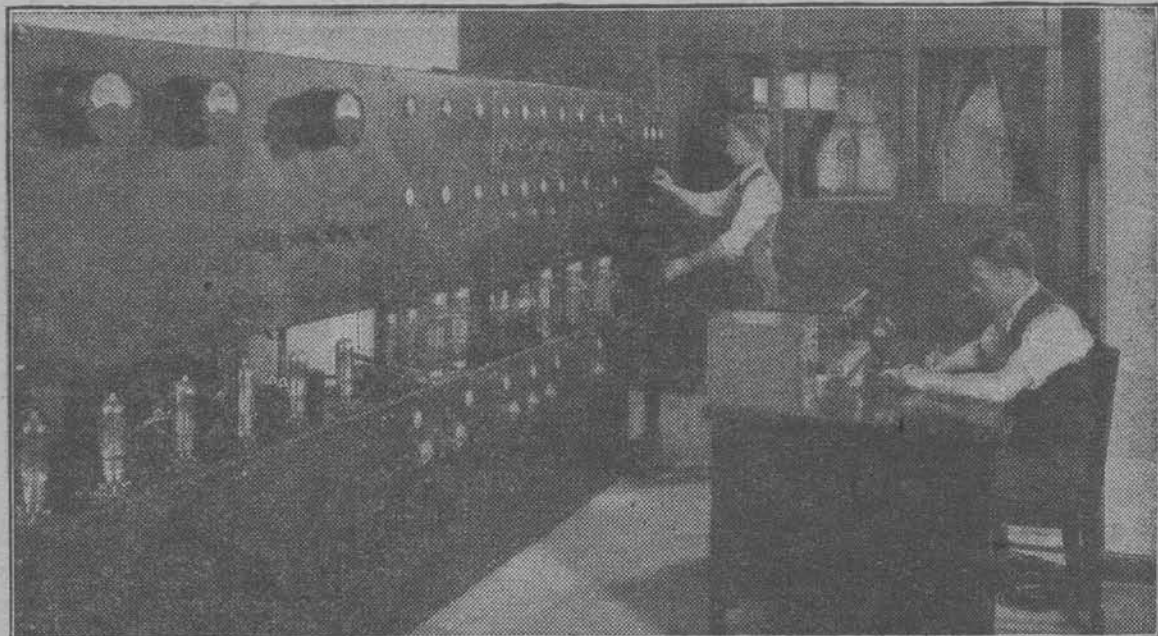
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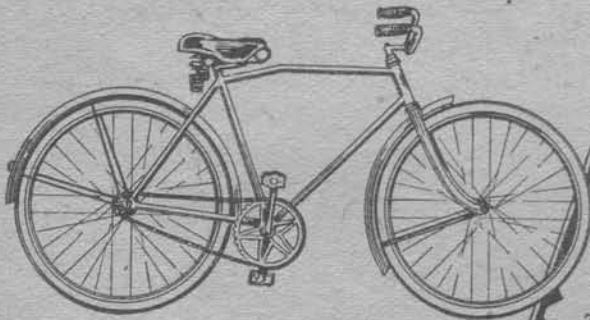
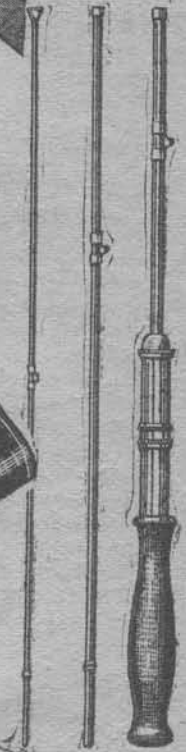
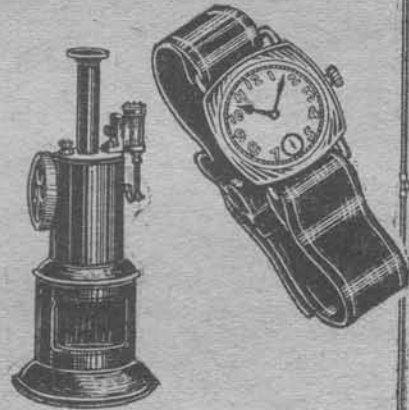
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TELEPATHY

By HUGO GERNSBACK



NE of the problems that has kept popping up continuously, from time immemorial, is the intensely interesting one of telepathy. Telepathy, in short, is a silent transference of human thought to a distance. There is nothing new at all about this idea; for it was discussed by the ancients thousands of years ago, and it is sure to recur at an increasing rate in the years to come.

Not so many years ago, the present writer (through one of his former science magazines) offered cash prizes, totaling some six thousand dollars, for scientific proofs of telepathy, as well as other so-called occult phenomena. The prizes were never claimed. Yet the belief that there is such a thing as telepathy seems to be pretty well established in many minds; although, from a scientific viewpoint, no real evidence has ever been produced. The test for telepathy is exceedingly simple, since no apparatus of any kind is required. Any body of scientists or investigators would believe in telepathy if the following tests were met to their satisfaction.

Take two people who claim to have the power of telepathy, or thought transference, and place them in two adjoining rooms. Let subject A read, from a previously unknown book, a sentence, and let him transfer the sentence by telepathy to subject B. If subject B is then able to give this sentence, either in whole or in part, the test would seem to show conclusively the transference of thought. Yet, absurdly simple though this procedure is, no subjects ever tested have been able to "come through". The usual excuse is that the "conditions" must be right because, otherwise, no thought transference can take place. Inasmuch as the subjects usually claim "psychic power," they will tell you that such tests can never bring about results; and that tele-

pathic messages are not obtained at will, but often come in a sleep-like state, under emotional stress, or otherwise unexpectedly.

Yet, no less a scientific authority than the late Luther Burbank claimed that he had been able to converse freely by mental telepathy with his sister, thousands of miles away; and that he had proved to his own satisfaction that there actually is such a thing as telepathy.

With such a statement from so great an authority, and so universally respected a man as Burbank, even the hard-boiled scientific investigator is forced to take some notice of a so-called *noumenon*, if such there be. Very frequently telepathic claims have been made by a pair of subjects closely related—such as mother and daughter or, more particularly, twins. Yet, when it comes to simple tests, they have produced no results; and the whole subject of telepathy immediately becomes very vague and inconclusive.

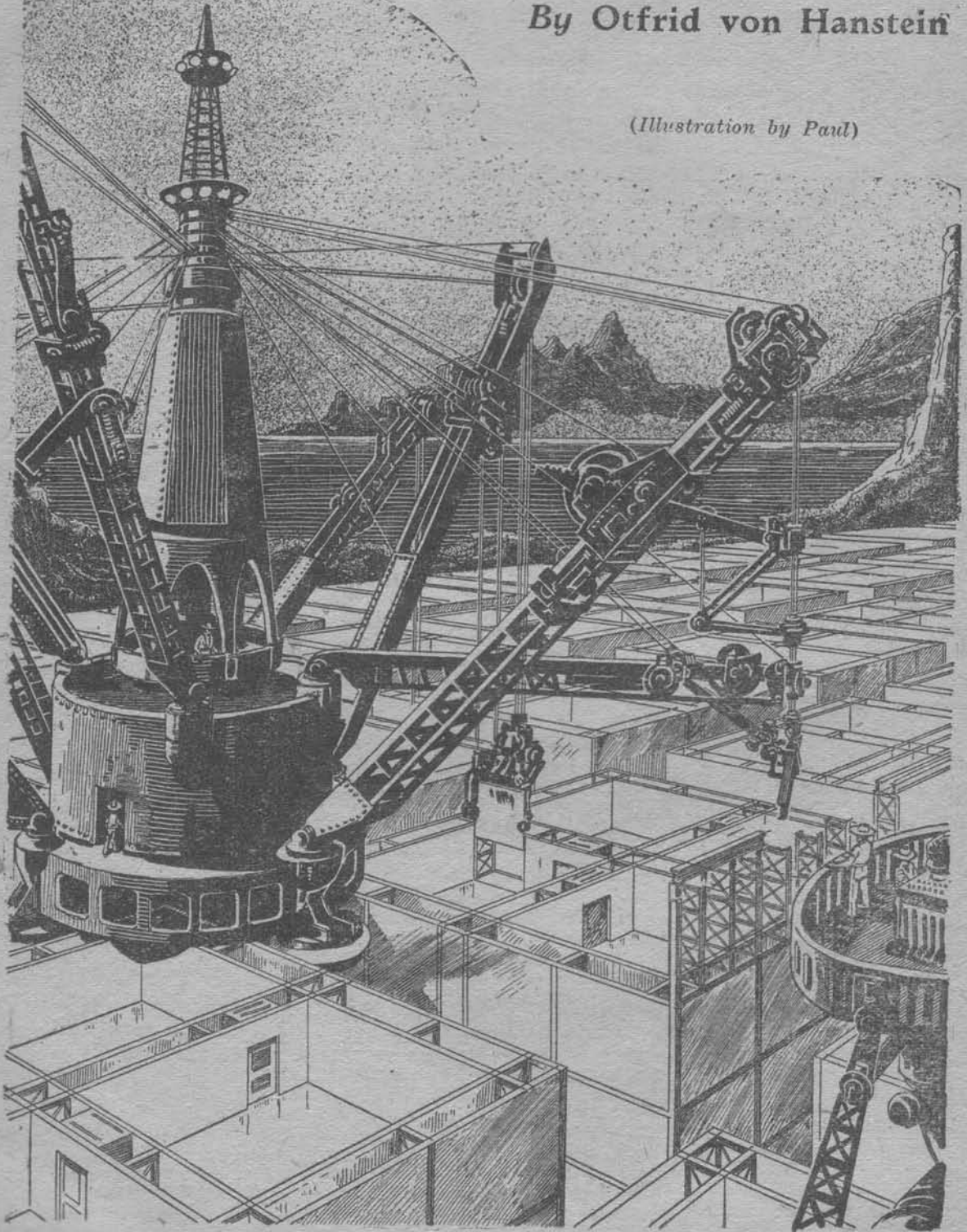
We do not take the standpoint that telepathy as a whole is impossible or even improbable; and, perhaps, 10,000 years from now, when the human race has advanced further than it has now, conditions may be different.

Scientific investigations have actually shown that any concentration of thought produces certain physiological effects, which can be measured by sensitive electrical instruments; but, so far, no investigator has been able to detect the so-called thought waves by means of any instruments not connected directly to the human body. If the human brain is capable of producing electrical waves of an extremely short wavelength, as yet unrecognized, it is possible that later investigators may be able to detect such waves by means of electrical apparatus at a distance, just as we are receiving radio impulses from a distance today. But, so far, the experiments have given no positive results of any kind.

Utopia Island

By Otfrid von Hanstein

(Illustration by Paul)



Helling and twenty helpers are building the city together with their iron assistants. An iron arm of a crane sinks down . . .

(Translated by Francis Currier)

ABOUT five years ago some extremely strange events occurred, which had filled all the newspapers. In the space of a short time there had vanished, without a trace, from various cities of Germany as well as other countries, a number of men who not long previously had distinguished themselves in science.

In each case the man in question was a bachelor. Almost all were less than thirty years old, being scholars who had made new discoveries and whose daring plans were at the moment meeting opposition.

The mining engineer Eberhard Römer had lectured on the possibility of using the metals on the moon. He wanted to get there by means of space ships. On the moon, which offers no possibility of life to earth dwellers, because of its lack of an atmosphere, he planned to erect air-tight houses filled with oxygen, from which mining operations were to be begun. He had been laughed at. In bitterness he had left Munich by plane for Leipzig and had disappeared without leaving a trace.

At the Medical Congress in Vienna the instructor, Dr. Weigand, had presented some revolutionary theories regarding the combatting of cancer. His proposals had been rejected. He had left Trieste on a Mediterranean trip, and on the day after the departure his cabin was found empty. His was thought a case of suicide due to a sud-

den nervous breakdown.

Ottomar Goldner, the Swiss engineer, had requested financial support from his government, so that he might set to work large-scale experiments on the St. Gotthard snow fields to secure quantities of heat from the solar rays and to store it up. When his request was laughed at, he took the train for Germany and disappeared from his berth.

Otto Schultz, the ingenious Berlin planner; Viktor Grotefendt, who had devised a plan for a most remarkable express route through the middle of the ocean and who was regarded as a candidate for a sanitarium for an observation of his mental state; and Gerhard Vetter, one of the most gifted men at the Siemens plant, disappeared in the same way. All this occurred within a week.

While people at large considered each individual case an accident, in Berlin the aged retired criminologist, Dr. Schlüter, was of the opinion that there must be some connection between them, and investigations were made through the police. Police activity was doubled, when about

six months later ten more young men vanished. This time, indeed, they were young workers, likewise unmarried; mechanics, high grade technical men, foremen. In this case also they came from different cities.

Finally the matter was forgotten, for as time went on nothing more had occurred to

WE, of the twentieth century, pride ourselves on our wonderful civilization. Yet we have only to stand off and survey the senseless traffic jams in our cities; our slums; our business depressions; our hospitals filled with people afflicted with diseases and accidents that could have been averted; and our brutal wars, to realize that our civilization is indeed in a crude and unformed state.

What we have has been given us by science, and science can be the means to make our world really wonderful. But for that gigantic task, science must be freed from the grasping hands of the profiteer and the stupid blunderings of the politician. What could science do if it had a free hand? The answer should be fascinating to every person with imagination, especially when it is given by the masterful mind of Otfried Von Hanstein, author of "Electropolis".

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keep the public interest alive. Only Schlüter pursued his secret investigations.

Finally, one day there appeared a strange advertisement in the *Hamburger Fremdenblatt*:

"Do not worry about us! We are well and full of hope. We shall be heard from in exactly five years."

Certainly it was held that this advertisement, which was signed by the vanished scientists as well as by the workmen, was nothing but a poor attempt at a joke, especially since it appeared on April first. And so the world ignored it and gradually returned to its normal affairs, forgetting this mysterious business altogether.

All this, as I have said, had happened some four or five years ago.

Now lately a scientific expedition had been fitted out at Berlin. The interesting reports of the American explorer Beebe about rare forms of animal life and other inexplicable natural phenomena on solitary islands of the Pacific had furnished the impulse for it.

The thorough investigation of the Iguana Islands, the riddle of the old civilization on Easter Island, and still other goals were also in the minds of the participants in this expedition. The members included the botanist Prof. Ortler of Gottingen, the mining expert Viktor Zolling, the meteorologist Gumpendorf, Prof. Gert Van Rhyn, who was chief engineer of the Schuckert works, and the surgeon Geheimrat Frank. In addition there were a few younger scientists, and at the last moment they were joined by Dr. Ernst Schlüter, the son of the criminologist. They went first to New York, crossed the American continent, and finally sailed from San Francisco in the yacht *Nightingale*, which had been placed at their disposal by Mr. Hastings, a Chilean planter.

Almost at the start of the journey a great

storm came up, which on the fifth day became a regular hurricane. Sulphur-colored clouds sped before banks of deep black. The waves foamed up high, their crests white and phosphorescent. Lightning flashed, while the roar of the sea drowned out the thunder, aided by the howling of the wind. Uncanny St. Elmo's fire danced almost incessantly on the two slim antenna masts.

THE *Nightingale* bobbed up and down on the waves. It was a stately private yacht, which its rich owner had equipped with all modern accessories. The effect of the rolling of the ship was lessened by a shock-absorbing system, the propellers were driven by electric motors, and the steersman was replaced by a robot steering device. Dr. Frank, the well-known surgeon, who was accompanying the expedition as its physician, had at his disposal a sick-bay equipped with every convenience.

To be sure, before the might of this tornado the proud yacht was like a nutshell. It danced on the crests of the giant waves, pitched from port to starboard, dipped its prow deep into the val-

leys between the waves, and in the next moment was flooded by the speeding mountains of water. For three days the storm had been raging with its utmost strength, creating a cyclone rare in these parts of the ocean.

Finally the nucleus of the cyclone lay behind the ship. For some moments the exhausted travelers were granted repose, but things had gone ill with the white yacht. Bad gaps yawned in the rail, parts of the bridge had been demolished in the storm. Incessantly the crew worked at the pumps, and though all hatches and bulkheads were shut, water kept forcing its way inside. Whatever was not actually fastened down



OTFRID VON HANSTEIN

lay broken on the cabin floors.

Until the few short moments during the slackening in the gale no one had been able to eat, and even in this interlude of relaxation there had been no eating except some bad coffee with sea water mixed in and some cold meat. Nevertheless the brave men enjoyed a splendid spectacle. In uncanny splendor the St. Elmo's fire and the bright flashes of lightning came from the black sky, while the sea opened up beneath them, shimmering in every color, like a yawning abyss of hell. The men stood close together, with serious pale faces. At every new giant wave which rushed against them, they heard the groaning of the ship's planking, and on their lips was an anxious question: each time a new mountainous wave made it roll, how long would the yacht hold out?

Gert Van Rhyn made use of a momentary improvement in conditions to unfasten the rope with which he had tied himself to the rail. Clinging with his fingers, he made his way to the captain.

"Look out!" A new wave would have swept the impetuous man overboard, if Paul Gesche, the first officer, who was now tending the wheel ordinarily operated automatically, had not sprung to his aid.

Van Rhyn turned to the captain. "What is going to happen?"

"That depends on whether the ship can survive the next six or nine hours."

"Where are we?"

"To tell you the truth, I don't know. We have been driven far out of our course. Stellar observations have been impossible for days. In this storm there was no way of taking bearings that you could depend on."

"Are there reefs here?"

"Probably more than we want. We cannot be far from the Iguana Islands, and everywhere there are little uninhabited islets and extinct volcanoes which rise steeply out of the ocean. Perhaps we shall succeed in getting into some bay. Half an hour ago I sighted reefs in the northeast. If I am not mistaken, that may have been Pinta. Then a large island should appear to the southwest."

"Is there a harbor there?"

"An ancient refuge for pirates. Otherwise, generally speaking, no ship ever passes these desolate islands."

The conversation was carried on in screams, because of the storm. Then the gale lessened for a few minutes. The other gentlemen likewise utilized the pause to climb up to the bridge. "It is getting somewhat calmer," was the general affirmation.

A Mysterious Force

A NEW and frightful flash of lightning blazed forth and showed white foam ahead of the ship. They were still some two miles away from it, but that meant little in view of their mad course in the storm.

"There is a reef. Starboard, Gesche, hard a-starboard!"

"What can that be?"

"I don't know exactly. Perhaps it is one of the little reefs of the Iguana Islands. Starboard, Gesche!"

"It is full starboard."

"Thunderation, the ship doesn't obey the rudder!"

"The rudder works all right."

"But the ship doesn't. Good Heavens, we are driving straight toward the reef!"

Signals were given for using the emergency rudder control.

"Everything works, but the ship doesn't obey."

"If the old legend of the magnetic mountain were not madness, I should think the rock there was pulling us straight on. In half an hour we shall be wrecked. Port, Gesche, hard a-port! Perhaps that will work."

The rudder swung round. But it had no effect; the ship raced toward the rock.

"Around those rocks there must be coral reefs quite unknown to me. I don't understand. The waves are not foaming around the rocks, they shoot up right in the open sea."

"How they phosphoresce!"

"It almost looks as though the water at the crests of the waves were changing into boiling steam."

"It is steam."

"Nonsense!"

There came a new frightful burst of wind. The mainmast snapped with a short sharp report, flew overboard, whizzed out in the air, and was carried off like a feather, in spite of its weight.

"What is that?"

Suddenly the entire mast flamed up and burned up in an instant high in the air, with a brilliant flame.

"What fearful lightning!"

"That wasn't lightning."

"What was it?"

"Lightning can't actually fuse a mast in the air in a minute."

"Gentlemen, we are lost!"

"Get the lifeboats ready!"

"That is nonsense! How could a boat live a second in this hellish sea?"

The men stood close together, in their oilskins and sou'westers, wearing lifebelts and supporting vests, each one convinced however that the equipment was useless. Destruction seemed certain, and yet they could not recognize what force it was that worked so balefully, so that the rudder failed completely, though the chains were undamaged and the motors were working with full power.

Then with equal suddenness all became perfectly calm. The storm was still blowing, but the sea was perfectly smooth. This too seemed a miracle. The waves changed from the greatest roughness to complete smoothness. A few times more the ship rolled from one side to the other as though drunk, and then it righted. It rode absolutely smoothly, but even now it did not obey the rudder no matter what exertions were made. The ship rode straight toward the rock which now rose quite sharply from the placid water.

"A MIRACLE, an absolute miracle! The magnetic mountain!"

The scientists and the captain had no explanation for this. They looked aft. Behind them, now already miles behind, wild foam rose up, the same foam which they had seen in front of them fifteen minutes earlier.

"That is quite impossible."

"We are enchanted."

"It is mockery of all the laws of nature, to have perfectly calm water here."

It appeared absolutely certain that the yacht would crash on the cliffs in a few moments, even if a miracle had brought it over the girdle of reefs. The reefs almost completely encircled this place, which, due to some inexplicable circumstance, was windless.

Again minutes passed, which seemed an eternity. The strange power, which their ship obeyed and which was stronger than motors and rudder, was drawing them irresistibly toward the cliffs, their speed now decidedly slow. And then—the ship made a turn, avoided the coast, was directed by an invisible and mysterious power, and slipped along the shore. The ship executed one more turn, as though it were in the hands of a skillful pilot. The officer in desperation had long since abandoned the wheel.

In many turns the yacht passed by grim cliffs, which all presented a desolate uninhabited face. A little harbor opened up, a regular little harbor, to be sure with a desert shore, on which there was not even a trace of vegetation. Then the ship stopped abruptly about a mile from the shore.

"Drop that anchor!"

The windlass did not obey. The cable simply could not be released. It formed a single solid mass. Yet the ship stood quite still. Although there was certainly a slight swell here, the yacht remained absolutely motionless.

"All this is incredible!"

"Hello, there is some one standing on the shore!" Captain Van Brecken was holding the telescope to his eye.

"A savage?"

"No, a European."

"Things are getting still crazier!"

"We must go ashore."

"We will try to lower a boat."

The boat readily glided down at the davits.

"I don't feel like leaving the ship."

"You don't need to, Captain."

The physician was the first one at the ladder. The other scientists, all full of intellectual curiosity, all happy to have es-

escaped the momentary danger, got into the boat. The captain was just ordering some of the crew to climb down to join them,—he and the other officers were to remain on board—when another incredible thing happened. The rope, which held the boat to the ship, flamed up, as though kindled by an invisible flame. It burned through, and at the same time, again driven by an inexplicable power, the motor boat began to move, gliding toward the coast, while the crew remained behind.

The scientists looked about them. The yacht was turning around, pointing its bow toward the open sea. While the captain shouted loudly and waved his arms, while wild excitement reigned on board the yacht, it was going full speed to the open sea again. The gentlemen in the boat were struck dumb. They did not understand all this. Then a slight grating could be heard under the keel of the little motor boat, and it glided over the sand and was aground.

The men sprang out. At least they felt firm ground under foot again. Yet they saw clearly the desperate situation in which they were. They were on land, but a steep rough rocky coast, with only a narrow strip of beach before it. There was no house here or any vegetation. Nor could anything be seen of the European whom the captain claimed to have observed. The scientists had *in toto* nothing but their oilskins, they were still in their lifebelts and swimming vests, and had with them not a bit of food. They could see the yacht far out on the ocean, becoming smaller and smaller in the distance.

CHAPTER II

More Magic!

THE men climbed the steep wall. Here human hands had evidently made a convenient stairway and even provided a rail.

Now they were at the top, looking around. It was plainly a small uninhabited island, upon which some miracle had brought them. Round about them stretched the open sea. The weather had become fair, the hurricane

had blown itself out, and only great black clouds still sped across the sky. The yacht was no longer to be seen.

"The island is uninhabited," they agreed.

Prof. Van Rhyn raised his hand. "Gentlemen, have you an explanation for all this?"

"Unfortunately, no."

"Do you believe in the lodestone mountain?"

"We are dreaming, or we have lost our reason."

Now Dr. Schlüter, who had thus far kept quite apart from the others, cried out, "Gentlemen, the magic is continuing."

They looked around, and what now appeared to them was again mad enough. Up at the top of the stairway, at the point where they stood on the bare rock a few minutes earlier, there was now a tent, a pretty gaily colored tent, brightly lit up by the now brilliant sun. It stood open, and in it stood a table with six comfortable chairs around it. And on this table was a refrigerating compartment with all sorts of good things: caviar, oysters, lobsters, cold roasts, salads. Beautiful crystal glasses stood there, and in the ice section lay several bottles of Rhine wine.

Dr. Frank laughed contentedly. "If we really are here in the realm of a magician, it is at any rate a charming magician who knows that we are hungry."

Dr. Ortler shook his head in vexation. "If it is human work, it is certainly a most incredible violation of our freedom."

Frank laughed. "Quick, gentlemen! One must take feasts as they come. Who knows when this 'wishing table' will vanish again!"

Prof. Zolling remained somewhat hesitant. "Shall we really. . . ."

Frank had already filled a glass and was reaching into a dish. "The oysters are excellent."

Now they all felt a terrible hunger, for they had hardly eaten for three days.

Frank raised his glass. "To the health of the magician!"

"Supposing it is all poisoned?"

"It is all the same to me," said Prof.

Gumppendorf, struggling with an immense spoonful of caviar.

Ortler still hesitated. "I cannot bear things which I cannot understand."

"Then go hungry, friend! The lobster is magnificent."

There sat these six men, who hardly knew what was happening to them, who had just escaped certain death in the hurricane and were now on a wild inhospitable coast, sitting in comfortable chairs, eating the finest delicacies, and drinking splendid Rhine wine.

Frank wiped his mouth. "But now. . . ." He could not continue, for just as unexpectedly as the table had been conjured up out of nothing, there now suddenly stood before them a young man, evidently a European, wearing a becoming sport suit. He had his hat in his hand. "Gentlemen, I have the honor to welcome you."

The six men stared at the stranger, who spoke with the intonation of a German-American. He was tall, thin, weatherbeaten and stern of face, and somewhat wild in appearance, but he wore a faultless sport suit and had the manners of a man of the world.

Prof. Ortler addressed him. "What is really the matter here?"

The stranger smiled. "Permit me to introduce myself. White, Bob White!—Dr. Frank, Professor Ortler, and the other gentlemen, I have the honor as representative of the settlement of Santa Scientia to bid you welcome."

"Santa Scientia? Doesn't that mean 'sacred science'?"

"Just about."

Ortler shook his head. "I do not understand. . . ."

WHITE smiled. "I must beg your pardon for the somewhat violent manner in which we obtained the pleasure of your presence. I hope that you will understand everything, after you have been our guests in the capital Isabella."

"The devil take—"

"Please, leave that unpleasant gentleman out! Most honored gentlemen, everything which now perhaps appears to you somewhat

strange, can be explained in natural ways. In a few hours you will perceive that we acted in your interests, when we freed you from the annoyances of the hurricane."

Ortler turned to his colleagues. "The man is evidently insane."

Bob White acted as though he had not heard the remark. "I must put before you, after being our guests, our proposal that you enter the service of our great cause for five years. . . ."

"The devil we will accept!"

Again the stranger passed over the remark. "In case, then, you decline our proposal and wish to return home—we shall of course accede to this wish—well, in this case I must ask you to give your word of honor, your word of honor as scientists, to say nothing on your return of what you have seen and experienced here."

"And if we do not give our word?"

"Then, in a few hours your yacht, which is still held fast within our power, will return, you will go on board again, and you as well as we will have lost something that we might have gained."

Frank, who up to this moment had continued eating, looked up. "I want to know what is actually going on here."

"You give your word of honor?"

"Here is my hand."

Zolling had been reflecting. "If you think so, Frank. . . ."

Van Rhyn nodded vigorously.

"Do you in return promise to explain everything to us?"

"Of course, you will see everything."

"Then you have my word," cried Zolling also.

Gumppendorf likewise nodded. "I agree."

Dr. Schlüter extended his hand. "I too."

Ortler gave a sigh of vexation. "Then I am outnumbered. Here, my hand."

"I expected nothing else. Let me explain briefly what has happened thus far. It all appears to you as a miracle, but in reality there is nothing at all strange about it."

"Excuse me!"

"Of course it was not hard for us in Santa Scientia to learn that you were on that yacht."

"But actually what is this 'sacred science'?"

"You will learn that later. Today I should just like to indicate that Santa Scientia is destined to become the heart and brain of the entire world."

"At any rate that is not quite modest."

"You will judge otherwise after you know everything. It is simple for us to be informed about everything going on in the world. Thus we knew of your expedition, knew that you planned to go to the islands of the Pacific, and also that you, Dr. Schlüter, came on a sort of police business. I may say that in a short time you will meet in person the Germans who vanished about five years ago—not against their wills but with their complete agreement."

While Schlüter was listening, Ortler asked, "What gentlemen?"

"Our fellow-workers, the engineer Römer, Prof. Weigand, and . . ."

Ortler nodded. "Now I begin to understand. These gentlemen are. . ."

"Quite right; the founders of Santa Scientia. Therefore during the hurricane, which was very handy for us. . ."

"Very kind of you!"

"We could always follow the position of your ship, and once you came within the sphere of our electrical long distance control, we simply removed your independent power of motion and attracted you to our coast. You know, that is an old invention indicating nothing extraordinary."

"Well, well!"

Some Explanations

"WE furthermore have the power—to explain which would consume too much time at present—of quieting the sea in our harbor. You must have noticed that in spite of the blowing of the storm here, the waves were perfectly smooth. This is an invention of our friend Vetter. It depends on the theory of atomic disintegration and involves a system of submarine pipes. Strong and specially adapted electric currents are continuously (that is, during storms) operated in a circuit of about two kilometers outside the island. Great quan-

ties of hydrogen atoms are sent up from below. These produce the light foam which you saw covering our harbor and which seemed to you outside as breakers.

"The wall of hydrogen atoms rising there causes the on-rushing waves to calm down, so that there is a quiet sea in the harbor. It is the same effect that is produced with oil, only ours is much stronger. Once you had come within our sphere of long distance control and had crossed the wall of foam, you were in safety. It is too bad that through a slight error the artificial lightning, which was really only to burn through the rope fastening your boat to the yacht, was sent too soon and burned up one of the masts of your ship. We shall be glad to make good the damage."

"Incredible!"

The scientists looked at the man, who spoke of such seemingly impossible things with perfect naturalness, their eyes becoming larger and larger. Van Rhyn said, "I think we are dreaming. No, I am dreaming everything—about you, also."

White smiled. "You will soon understand everything. I am just giving you brief explanations, so that you may see that the unusual and rather violent form of our invitation was unfortunately inevitable and just for your own good."

"But. . ."

"No, no, there is nothing wonderful about it, if one rightly knows how to use the forces of nature."

"It is unbelievable!"

White smiled slightly. "Nothing that happens is unbelievable. It was neither a mountain of lodestone which attracted you nor are you in the realm of a magician; you are simply in a land which is a few centuries ahead of the rest of the world."

"And where is this puzzling Santa Scientia?"

"In a very pleasant and fertile region, which is still indicated on the maps as the completely uninhabited main island of the Iguana archipelago."

"But here we are on a reef and not on an island on which there can be a city, to say nothing of a whole realm!"

"Quite right, we are on a reef lying out-

side the main island. It is several hundred kilometers from here. At present we have reasons for not having open harbors, though there could be no objections on the part of the state of Puitu, from which the island was bought by our chief, Mr. Benjamin Cook, or, if you prefer, King Benjamin the First of Santa Scientia."

Zolling was getting nervous. "If I may ask, how do we get over to the island?"

"By the electric railway," explained White calmly.

"By. . . ."

Dr. Schluter interrupted. "Where is the tent?"

"Oh, yes! I thought you had finished eating. See, here is a concealed stone block set in the rock, purposely made irregular in form. This block can be raised and lowered. It simply stands on a pillar and brought up the tent with the little breakfast, while you were looking at the island. Because I hoped that you had eaten enough and would now do me the honor to come to our Capital Isabella, my people caused the tent to disappear again.

"It is a very useful device. It occasionally happens that we have to do with persons whom we do not wish to take behind the scenes. We can entertain them here. But we are cautious and only invite really eminent persons."

A soft whistle sounded.

"Are the gentlemen ready? The chief is already asking where we are."

"King Benjamin the First?"

"Say simply the chief. Here we do not know ourselves whether we are a kingdom, a republic, or a joint stock company. Actually the only thing we do not have is politics."

The men looked at one another. If the good food had not given them a pleasant sense of comfortable repletion, if such excellent delicacies had not just passed their teeth, they would still have been inclined to think it a dream. Hesitatingly they followed Mr. White.

Again a part of the rock had opened. Steps led into a room brightly lighted by invisible lamps, at the side of which there stood open the door of a vehicle partly re-

sembling an elevator and partly an electric street car.

"We could have taken you directly to Isabella, but first we had to have your word of honor to maintain our national secret."

The men nodded in understanding.

CHAPTER III

In Santa Scientia

THE men entered the car. Even now they saw no living being except their guide, as he shut the door.

"Look out, we go down now rather fast! You must remember that the sea and these cliffs are everywhere very deep and that we must go down more than a hundred meters. Dr. Zolling, think of the shaft of a mine!"

The car slipped downward, very fast indeed but quite noiselessly, and then it gave a little jerk.

"Now we are going on an inclined plane into the real tunnel. It would be useless loss of time to change cars."

Soon after that the car entered upon a level quite at a much greater speed.

"We shall soon be at our destination. Here we go about five hundred kilometers an hour. I told you already that there is just a single tube in which our car is propelled floating freely. This is the only possible submarine railway of the future. It is incomprehensible that it has not yet been used in the rest of the world, for it is not costly to build. We made this line in a few months."

Chief Engineer Van Rhyn looked questioningly at him. "Excuse me, but are we then in a tunnel under the sea?"

"Absolutely not. Tunnelling is uselessly expensive and also exposed to a thousand dangers, especially in a zone where earthquakes are not infrequent. We regret that we had to have the last part, which passes under the land, in the form of a tunnel."

"Then what sort of a road is this?"

"A tube road. Nothing is used but a single tube lying about 100 meters below sea level. It is made of a certain alloy which is not attacked by sea water and it

floats freely in the sea at a depth making it independent of the motion of the sea.

"The tube, filled with air, mostly with strongly compressed air, of course has a strong buoyancy. Now it is anchored to the bottom of the sea every five hundred meters by two hawsers, also made of this alloy, so that it cannot rise higher but on the other hand cannot sink any lower. Such slight oscillations as may perhaps occur do not matter."

"And how did you put together this tube, which is at least five hundred kilometers long?"

"We didn't. It is all in one piece."

"I beg your pardon!"

"That is a process worked out by our engineer. You will see it yourself. A great compression machine is set up where the tube comes out into the sea. White hot metal is continuously supplied from above, while a piston in the inside presses this metal into the tube form. As the tube is, of course, temporarily closed in front, it is forced out of the mould into the sea. Because this tube by no means has to be thick-walled and therefore is not heavy, it is now dragged by ships on cables at about the desired height, until the next station is reached and the anchoring can be begun. Thus we have a completely closed tube."

"And do the cars move in it by compressed air?"

"Yes and more. The tube is lined closely with copper wire, bedded in iron. At definite intervals high tension cables bring current to sunken transformers. Therefore there results a continually progressing electric field, which pulls the car forward and lightens the work of the compressed air. Now because the car itself is somewhat smaller than the diameter of the tube and thus leaves a slight open space about it, it is raised during the trip into a floating position. A system of running wheels serves only for the car to run on at the start of the trip and to keep it from touching the walls. In this way there is no friction and there is very little strain on the tube.

"You saw that at first we glided down like an elevator. We sank into an auto-

matically closing compressed air chamber, and then we shot forward into the perfectly horizontal tube. The hard glass windows—made by Schott's process, being Jena glass—are so fitted to the outer walls that there is a perfectly smooth surface, and these little apparatus on the ceiling allow sufficient access of oxygen. Gentlemen, we have nearly finished our trip. You already see that we are gliding more slowly. I have the honor to welcome you to the soil of Santa Scientia, in the city Isabella."

THE travelers had the sensation of floating upward. Then the car stopped. When the door now opened, they found themselves, a bit dazed by the quick journey, in a circular arched hall, its walls uniformly covered with a marble-like mass, bluish in shade, decorated with gold ornaments. There were no windows, but the room was as bright as day, despite the fact that no mode of illumination was visible. The indirect light seemed to come from the walls themselves. The room in no way suggested the lobby of a hotel. In a circle in the center, arranged in pairs, stood a number of comfortable armchairs.

"You will certainly want to wash and change your clothes. I therefore request you to go on to your rooms. We have taken the liberty to provide you with everything necessary. Would you like to lodge in pairs? Good! You shall find everything to your convenience? May I ask how you wish to be paired?"

Dr. Frank nodded to the mining engineer. "Zolling, does it suit you?"

Ortler stepped over to the meteorologist. "Perhaps we two?"

Van Rhyn nodded to Schlüter. "Then we will lodge together."

"May I ask you to sit down a minute in these armchairs?"

They complied noting that the chairs were numbered.

"We are wet and dirty."

"That does not matter. Please."

Somewhat hesitatingly they sat down. Bob White pressed a button. Three hitherto perfectly invisible doors opened in the smooth walls, the chairs began to move,

glided with their occupants through the domed room, and reached an obliquely ascending passage. Again three doors opened, and a few seconds later each couple was in a cheerful room. Although they were provided with little furniture, they were still pleasant. A soft carpet covered the floor, the walls to be sure had no pictures, but they had a warm agreeable tint. In the center stood a low table with a comfortable leather sofa before it, and there was likewise a desk and chair. Yet there was no sign of a door in the walls, and there was neither a wardrobe nor a bed nor a washstand.

"A most remarkable room, Zolling!"

"It almost seems as though we had got into a trap and were locked in."

"And where is there any way of washing or even a bell?"

"Look over there!"

In the center of the wall a light could now be seen, not an electric light but a circular luminous spot. Frank stepped over to it, and when he was still a few paces from it, a piece of the wall moved aside. Before them lay a very neat bathroom, likewise finished in bluish marble, with two compartments having tubs in them. In front of them on a bench lay clothing, shirts, socks, underclothes, complete business suits, shoes, and everything else necessary. From two faucets warm and cold water was running into the tubs.

"That looks fine."

"But are we really to take those suits?"

"I don't know what else we could do."

The men bathed, left behind their clothes damaged by three days of storm, dressed themselves in the obviously brand new linens and the suits, and then returned to the main room. At once the door closed behind them. The luminous circle now moved over from its place to a new spot above the desk.

"Look, Zolling!" said Frank to his roommate.

On the top of the desk was now visible a glass plate illuminated from below. Under it appeared words in Roman letters marked: *telephone, kitchen, chief, service, mail, airplane, electric railway, doctor, toi-*

let. Beside each word was a little red button. There likewise stood on the list the names of the men and after each pair the number of a room.

"Look there!"

Above the desk there was likewise inserted a glass plate, which they had not hitherto noticed, because it had not been illuminated until now. On this plate appeared writing. "Do the men wish to eat together? Do the men wish to eat in their room?" After each of these questions was again a red button.

"A very pleasant kind of service. I think we will eat with the others." Frank pressed the button and the writing changed.

"In ten minutes, please!"

"Oh, I'd like to shave first! I look like a savage, but I have no razor."

"Try your luck with the 'service' button!"

A Perfect Hotel!

ZOLLING pressed the button. A small cupboard in the wall opened, and out came a mahogany shelf with a telephone. "I should like to shave, but I haven't any equipment."

There was no reply, but almost at once another cupboard opened, another shelf came out, and on it stood a complete razor kit with all other necessaries.

"Indeed, very pleasant!"

In ten minutes there again appeared on one surface of the wall the luminous circle. At the same time there was a soft buzzing. The two men moved toward it, and again a door opened, the same one through which they had entered. Before the door stood a small padded open vehicle.

"The elevator!"

They seated themselves, and at once the car glided with them along the rails, which were set into the floor, glided on to a turntable, and entered another passage and a likewise round room, in which a table was set for six persons. At the same time there came from two other sides the other four of their friends.

They all reported the same experiences.

"In truth, a perfect hotel!"

They stepped to the dining table. Be-

fore each seat lay a very extensive menu and wine card. After each food offered there was again a button.

"Shall we have soup?"

They pressed the buttons. After a short time a circular place opened in the middle of the table and a dumb-waiter came up. The section of the table now stood on three decorative pillars above the dumb-waiter, and on this were six plates of soup.

Ortler, the ever nervous one, grinned contentedly.

"Excellent! We don't have to have a waiter who puts his thumb in the plate."

Frank surveyed the wine card. "Come one, let's drink!"

The wine also appeared with equal swiftness. Then the dumb-waiter remained visible until they had placed on it the empty plates, and the next course ordered by the buttons appeared in the same manner.

Frank was decidedly enthusiastic. "This is what I call truly an ingenious solution of the hotel question!" he cried.

Van Rhyn nodded. "At the same time probably simple and practical. Somewhere near the kitchens sits a man who takes the orders. If a house is built thus right from the start"

Finally they had eaten enough. Automatically there appeared cigars, cigarettes, and pipes and tobacco, besides lighters and ash trays.

"Excellent!"

Again there was a buzzing, and then the table, which stood on a circular slab, sank. The opening closed and there were now six chairs there. "Please!" This word appeared in the middle of the platform.

The men, who were becoming more and more enthusiastic about these startling things, seated themselves. Again there was a buzzing, and the platform rose and disappeared with them through a circular space which opened in the ceiling. They were now in a vaulted room made entirely of glass, a sort of conservatory, in which stood palms and blooming plants and which offered a view in all directions. On a table at the side stood a pot of steaming coffee, some little cakes, and six cups.

The gentlemen stood together and looked out. "So this is the Iguana Islands?"

"I still feel that I am dreaming."

"Where the devil is the city?"

It was a single great garden upon which they were looking. The glass pavilion seemed to lie on a low hill in the midst of a great park, which was interrupted everywhere by such hills and was divided by decorative fences into separate sections. Everything breathed fertility. Little springs spread a pleasant freshness, parrots swung in rings, and great cages contained gay-feathered songbirds. The sun shone, but it was covered by a light veil of mist.

"I do not understand all this. Where the devil is the city?"

"YOU are in the middle of it. Gentlemen, I hope that you are content for the present." Mr. White again stood before them.

"You do not actually have to believe in a fairy tale. Here you simply see a city which is intentionally built practically. At the moment we are in the eleventh story of the houses. What you see before you are simply roof gardens. I certainly admit that many things were favorable, that the entire city of Isabella, which is erected for ten thousand persons, is now inhabited by barely one thousand, that it was built all on one plan by Mr. Cook, and that there was no need to be sparing of expenses."

"But whence comes this vast wealth?"

"From pure chance. Some years ago a German scientist, Prof. Alesius, who was cast on this island by the wreck of the airship in which he was going from San Francisco to Yokohama, discovered the old caves in which Ruminjahui, the faithful general of the last Inca emperor, concealed his ruler's body and also his entire stores of gold and jewels. Mr. Cook became acquainted with Prof. Alesius in San Francisco. The scientist joyfully agreed to the use that the chief wished to make of this wealth. Then Mr. Cook simply bought the island of Isabella and the neighboring reefs from the government of Puita. I think he will speak of all this with you himself. May I now take you to him?"

"We are indeed eager to meet this magician."

Again they seated themselves in the chairs, and Zolling remarked shaking his head, "It is incredible how quickly one gets used to these things!"

They went through a whole system of passages; then doors opened, and they were in a great rectangular room, in the center of which stood a large desk. Before it sat in a chair—Mr. Cook.

The "chief" was a tall man with clear cut, truly American face, promising great cleverness and determination.

He now arose and addressed his visitors in fluent German. "Gentlemen, I must ask your pardon for the strange way in which you were received and, as it were, conducted here against your will. You yourselves will perceive the reasons. It is a perfectly unique realm into which you are entering. You are practically making a leap into the future. When chance brought to light a great treasure, I had a long consultation with my friend, the German scientist Aleisius.

"This treasure, which foresight had preserved for centuries, was not to be squandered for mundane purposes. But I was of the opinion that it also need not remain unused. Then came to me the idea of founding a sort of island of the future. Tremendous things all being done for the betterment of human life here. Clever city planners have worked out new ideas. They find a field here to work out their ideas uninfluenced by prejudices.

"It is not a question of changing the old but of creating the new. Great inventors have devised tremendous things—here they are realized. Great physicians and scientists are here to find peace and everything that they can use to make their researches live.

"The experiment shall be made of founding a state of enlightened persons, of workers of the mind, completely free from political entanglements. We want to strive to remove from man all mechanical drudgery and to substitute automatic machines. Among many other things we want to lead sport into altogether new paths. We shall

try to show the world that the man of the future will be a cheerful, happy, healthy, long-lived person. For this it was necessary to steal from the world, so to speak, the best brains, a sort of intellectual flowerhood, and then, as we hope, to win them to our program. It will be a pleasure for me to conduct you about and to let you see everything for yourselves."

This speech had produced a remarkably strange impression. From this man, who decidedly gave the impression of youthful creative joy and was by no means self-conscious or overstrained, there was transmitted a strikingly calming influence. Since no one replied, Mr. Cook arose with a smile.

"I thank you for the confidence which I read in your eyes and for your inner agreement which I feel. I certainly hope that in the future you will not lose this confidence, and I beg you to excuse me, if I now leave you alone for a short time. In these booklets I can offer you a guide, which will give you an explanation about the origin of Santa Scientia. Before I leave you to your reading, I should like to acquaint you with some more of my fellow workers, who are probably waiting near at hand. So please be patient a moment."

CHAPTER IV

A Spy!

COOK went out with a friendly bow, and Frank cried out involuntarily, "A strange man!"

"He is certainly not an every-day specimen."

"And still less a deceiver."

This last was said by Dr. Schlüter, and now Van Rhyn stepped over to him. "Pardon me, Doctor, if I use this moment of our being alone to ask a question, which I should like to do in the presence of my colleagues. On shipboard, in view of the storm, we had no chance to become closely acquainted, but now we shall probably have to live together for a considerable period. May I ask whether we may welcome in you a colleague, a scientist?"

"I am a criminologist."

"A criminologist?"

"I owe you a more detailed explanation. In the last few months certain events had occurred repeating some of five years ago. You know that then a number of particularly outstanding scientists vanished from Germany without leaving a trace. I do not know whether you have followed the reports."

"Yes, occasionally."

"Well then, exactly three months ago there disappeared from Berlin in a single day a great number of persons, who had already made a name for themselves, among them the engineers Bollman and Müller. This time they were chiefly mechanics and chemists and even some whole families with wives and children. After some time, there arrived in almost every case a postcard from San Francisco to the relatives of the missing man, saying that all was well with him. It is obvious that the police began to wonder about this continued removal of German citizens, and so I was given the duty of going myself to San Francisco and to try from there to learn something. But in Frisco no one knew anything, only I happened to hear obscure rumors that puzzling things were happening on the Iguana Islands in the Pacific, islands hitherto unknown to me.

"At that time I made the acquaintance of the owner of the yacht *Nightingale*. Since I also learned of your expedition, gentlemen, I gratefully accepted the proposal of the Chilean planter that I come along on the boat. I had a definite feeling that I should accomplish something in your company, but I did not at once venture to acquaint you with my plans and hopes, because I was afraid you would object to my travelling with you."

Van Rhyn extended him his hand. "What you say is very interesting. I think I express the opinion of my friends when I assure you that you are welcome to us. It is just in our position that it might be very useful for us to have along a man with the trained knowledge of humanity possessed by a criminologist."

Schlüter bowed and thanked him, and then they sat down again. They addressed

themselves to the cigarettes which stood before them and awaited, with the tension of people about to solve an interesting problem, the return of Mr. Cook and the promised arrival of his fellow workers.

While the members of the expedition were talking with Mr. Cook and waiting for him to bring them the gentlemen who were to explain to them the mysteries and marvels of Santa Scientia and its capital Isabella, Bob White, the secretary of the American, had another and equally remarkable experience. White, actually of German descent and named at birth Robert Weiss, had become externally an American. He combined the American's iron power for work with the German's capability for enthusiasm; and had hardly found time in the last few years to think of the land of his birth. He was now sitting at a hurried piece of work, which had been interrupted by the reception of the Germans, when he was most unexpectedly reminded of his earliest youth by a strange occurrence.

He was startled by a ringing of a bell. A ground glass pane was in the wall, and on this now appeared writing: "Zeppelin 307 safely back from Frisco. Please use the telephone."

He grasped the receiver.

"A young man has come from Frisco on the Zeppelin."

"How can that be?"

"I do not know. The airship has distant control and carries only cargo. No mechanic went along. When we were unloading the young man jumped out and asked for Mr. Cook. He refuses any information that he will give any only to 'His Majesty King Benjamin or to His Excellency the Royal Chancellor'."

"A ridiculous fellow!"

"HE doesn't please us either. He is apparently very young and always has a mocking smile. He appears to me a spy who has been sent by some government to investigate us again, and maybe he bribed Möller in Frisco."

"Möller is dependable. Just send the young fellow here!"

It was certainly an everyday occurrence

for spies of various countries, especially the United States and England, to try to pry out the secrets of the Iguana Islands.

Already a bell was riging, the door opened automatically, and one of the cars of the electric house railway stopped before it. It was so fixed that it exactly covered the doorway, and there was no exit for the occupant except into the room.

Out stepped a small slender boyish man. He stood still as Bob cast a glance at his face though he had already seen these features before. On these features, much more mature than one would have expected in a boy, White detected something remotely familiar.

The newcomer made a deep bow, while a bold sort of mockery lurked about his mouth. "Your Excellency—I do not know how to address the Royal Chancellor."

Bob White wrinkled his brow. "Stop this childishness! My name is Bob White."

Again the stranger smiled. "I do not believe that."

Bob started. "What do you want? Why do you force your way unexpectedly into our country? What impels you to behave so improperly?"

The stranger shrugged his shoulders. "You have asked many questions, which I cannot answer all at once."

"You have refused to show your papers?"

"Because I have none—that is very simple."

"Who are you?"

"I? I am Elso Dorn."

White sprang up. "Who?"

"Elso Dorn. And if I am not mistaken—even if you are ten times over Royal Chancellor, or King, or Tyrant of the fabled Iguana Islands—you are my cousin Robert, who was born not White but Weiss."

Bob stared at her and now understood why this face had appeared so familiar to him. Little cousin Elso had been just a girl when he had left Germany, years before.

She seemed to guess his thoughts. "Quite right, I was five years old when you sud-

denly disappeared. Now I am unfortunately twenty-two already. If you are still doubtful, I remember exactly that I offered you my pancake, when you came to get your money that last time from my poor father, your guardian."

"Elsa—is it really you?"

"Certainly. But you do not seem very polite, since you have not even offered me a chair."

Bob stared at the girl. "Please sit down! I"

"You are surprised at my appearance? It is however very simple and understandable that for this trip I preferred to choose men's clothing. A lone girl does not like to travel out into the world without disguise."

"Then you are" Bob sought for words, while Elsa, who had her hair cut short in mannish fashion, sat down.

"All this is not so strange. Father is dead, and mother survived him only a few weeks. All that happened two years ago. I was all alone, even if my parents had educated me to be independent and had made me learn all sorts of things.

"I took a position with a German firm and went to America. A year ago I came to Frisco. I must admit that I often thought of you. I had heard that you were prospering somewhere in the world, that you had made your fortune. Then I thought that fortune might be coming to me out in the world. Unfortunately I was wrong. The German firm which had engaged me became bankrupt. Luckily I knew sufficient English by this time, and I got a place as secretary with Smith & Co. in Frisco."

"With our agents?"

"Quite right. We were all pledged to maintain silence about the affairs of the firm. I must have become very useful, for in the course of time I became private secretary to Mr. Möller and thus learned much about the strange city of Isabella and the still stranger business which Mr. Möller carried on for this city. It is only too understandable that I thought about it and cherished certain hopes.

A Vexatious Problem

"MR. MÖLLER, whom I tried to question, declined any information. Therefore I resolved to attend to matters myself. I knew that the Iguana Islands had something to do with it even though they were marked in the atlas as simply desert islands. Likewise I knew that every week a Zeppelin went there and that the craziest rumors about the great mystery of these island were current in Frisco. So I resolved to set out. That was not hard. I knew that the Zeppelins used to land on the reef of Santa Rosa near Los Angeles, in order not to be surprised by the American authorities, and that a submarine handled the business between this island, purporting to belong to Mr. Möller, and Frisco.

"I got leave for a trip to New York, stowed away in the submarine, and hid a few days in the freight sheds, which are placed underground at Santa Rosa. The Zeppelin came, but there were no passengers to be seen. I sneaked into the cabin by night. Of course I had food with me. Yet it was not a pleasant hour when the good airship moved out, bound for I knew not where.

"The cabin was locked, luckily without any inspection of it being made. If a passenger had arrived at the last moment, if Mr. Möller had learned something of the trickery, I really do not know what I should have done.

"The flight began. It was splendid, beautiful, beyond description. Below lay the foaming sea, while I floated high in the air. I was now perfectly safe. The pilot surely had no time while en route to bother about me. Unfortunately it became bitterly cold, and there must have been a bad storm, because I felt wretched. Finally I became better, and I even ventured to move slightly the curtain covering the glass door leading to the pilot's cabin. At this moment my courage sank to the zero point, when I saw that there was no pilot there. I was all alone in the ship, flying over the sea. I must admit that I thought myself lost and supposed that the airship had broken loose. Finally I became calmed by the evenness of the course and the fact that the ship per-

formed evidently intentional turns. I realized that an ingenious distant control system was at work. Then the fairy ship sank in great circles to earth. We made an excellent landing, and a very rude man received me."

"You certainly are brave."

"That is probably a family trait."

"Then you know that I was here in Isabella?"

"Not an idea of it. But I recognized you at once, when I saw you sitting here at the table."

"And what do you want here?"

"The same thing you are doing: to make my fortune in Isabella, nothing more."

Bob walked up and down. "You have acted frivolously."

"Perhaps not."

"You did not even know that the ship was coming to Isabella."

"Where else was it to go?"

"What would you have done, if I had not been here?"

"I did not think of you at all."

"Do you know how you impressed the man who found you?"

"How should I know?"

"As a spy."

"Good Heavens, is that how I look?"

"I really do not know what to do with you."

"Get me a position in which I can do something."

"I know of none. We have only six European women here, anyway."

"Then I am number seven, let us hope not the unlucky seventh."

"Don't make poor jokes!"

"You need me."

"No." Bob could not help admiring Elsa's courage, but the whole matter was very vexatious to him. What was a single girl to do here?

"You need a typist."

"No; our typewriters are so made that we just dictate into a tube and by the use of selenium cells the speech is changed into writing. So the machines operate automatically."

"Wonderful! I wanted to invent that long ago. Then you need a filing clerk."

"THAT is done automatically." Gradually the brave girl with the ever smiling face was making him better humored.

"A cook."

"Our machines attend to the cooking."

"A maid."

"The machines do that work."

"A sport teacher."

"To instruct men? You surely do not think you could do that."

"Exactly what position do you have here?"

"Private secretary to Mr. Cook, to whom the islands belong."

"What sort of a man is he?"

"I became acquainted with him when I came to Chicago, when I was a dishwasher in a cheap Chicago lunch room. He needed a secretary, had confidence in me, and saw that he could use me. So he took me along. Then it was all the same to me where I went."

"That was nice of him. And now?"

"Now I am, so to speak, his right hand man."

"And later you will be his successor."

"Nonsense!"

"You don't deserve it, either."

"Are you sure?"

"Because you are a very bad man."

"You do not know me at all."

"This strange man had taken you and made something of you, and you are not even willing to bother about me, though I gave you my only pancake when you left Berlin."

Bob laughed. "Do you still feel absolutely certain?"

"Isn't it so?"

"It was no accident that Mr. Möller took you into his business. I knew of you and asked Mr. Cook to try you out."

"Is that true?" She stepped very close to him. "Listen, Bob, you are a splendid fellow. You must be, and your Mr. Cook must also be, even if I still know almost nothing of this fabulous Santa Scientia and its capital Isabella. They say that this Mr. Cook is the richest man in the world."

Bob laughed. "He isn't badly off."

"Anyway, you have become something

with him. Now show that you want to help me! Keep me here, take me to Mr. Cook, speak for me, and do not send me away again!"

"If I only knew what to do with you!"

"Then think!"

Elsa had taken a cigarette from the box which stood on the table, lighted it, and seated herself comfortably in the chair. She appeared to Bob to be the personification of will power, this girl who had flown alone across the sea.

CHAPTER V.

After Five Years!

AGAIN a bell sounded. At once the door opened, and a little table rolled in automatically, with a letter on it.

"Airmail from Frisco." Bob opened the letter, laughed, and handed it to Elsa. "This will interest you."

By Zeppelin 337 your cousin Elsa Dorn is coming as a stowaway. I intentionally allowed her departure, to test her courage. I advise you to keep the diligent and dependable girl there. Möller.

Elsa blushed and looked in embarrassment at Bob.

"You see, you did not succeed in deceiving Mr. Möller. The ship was purposely not searched, because they knew well that you were in the cabin."

She pouted a little. "Too bad. I should have been glad to fool you."

Bob stroked her hand. "Welcome to Santa Scientia! What is to be done with you, I don't know. I will speak with Mr. Cook and I hope, that since Möller recommends you, he will keep you here. First you must change your clothes and become a girl again, before I present you to Mr. Cook."

"I certainly have no intention of going around here as a man. That was just as a disguise."

"Have you any luggage?"

"This handbag, in which I have a dress and the most needful things. You may imagine that I could not take a trunk along.

I left everything in hopes that I would find something here."

On the glass plate a word appeared: "Telephone."

Bob shook his head. "What is the matter now?"

"On the plane which brought the letter came a large trunk addressed to Miss Dorn. There is no lady of this name here."

"Yes, there is. The trunk is to go to the hotel, Room 608."

Elsa had listened with astonishment. "What has come?"

"Naturally your big trunk, which Mr. Möller carefully sent after you. Go to room 608 and change your clothes!"

"Where is the room? I do not know my way here."

"Just get in the car in which you came. Wait a minute. There, now I have told the good car where you want to go. See you soon! I expect you in half an hour, as a girl."

Bob had turned a few levers and pressed some buttons. Now Elsa got into the car, which still stood in the open doorway, looking at it curiously. Bob again pressed a button on the long switchboard. At once, before Elsa could speak, the door closed and the car glided away. It had no windows, and she did not know through how many passages and over how many inclines, which she seemed to sense; and around how many corners it glided, before it stood, with open door, at the entrance to a room. She entered a large rectangular room, bright and cheerful, having warm tapestries and comfortable furniture.

At once the door closed, closing up the place in the wall where it had been.

Elsa looked around and stepped to the window. An indescribable picture met her eye. She was evidently high up. Far below here lay streets, but they were streets in which there were no vehicles. They were covered with grass and edged with flowers. On both sides of the streets rose gigantic building, houses of glass and iron, within which lights shone, for evening had come. Above these houses, two or three stories above her, lay gardens, in which rose high

glass towers which radiated bright lights. It was all like a fairy tale.

Elsa stepped back from the window. She knew perfectly well that previously the room had been empty. Now there stood at one side her large trunk, which she had left in Frisco. She opened it. On one wall appeared a circular light. She stepped over toward it. When she was still several feet from the wall, a door flew open and she perceived a bath with all sorts of conveniences.

Half an hour later Elsa, wearing a sport suit, was again in feminine clothing. She looked at the clock and saw that her cousin was awaiting her. But how was she to reach him, when she could not even find a door. Then a bell sounded. At once the wall opened, the car was ready, and an unseen voice called from a loud speaker: "Please get in!" She entered and at once the car sped away with her.

BOB WHITE was sitting in his room, and beside him Dr. George Helling, the director of air transport in Isabella, and a young woman. "Dear George, let me present to you the spy who arrived."

"Well, who is that?"

"My cousin, Elsa Dorn, who has come to Isabella at the suggestion of Mr. Möller.—Dr. Helling, our transportation director—Mrs. Helling. Will you be so kind as to look after my cousin a little, Mrs. Helling?"

The young woman held out her hand to Elsa. "Welcome to Isabella! It is delightful that you have come."

When Elsa looked around, the two men had left the room. Elsa was alone with the young woman.

Pretty little Margarete Helling was a vivacious person. "What will you do here?" she asked excitedly. "What work will you take over? We are all busy here, that is, we work with our minds and go in for sport, to keep our bodies in trim. For subordinate things there are machines here. But we shall see. You will become acquainted with Mr. Cook. He will look at you and see what you can do. There are no incapable persons here, they are not admitted. It is

well that you came toward evening. By day nobody has any time to spare.

"But do you know what is wrong? We have too few women, young women. We have no girls at all here. I hope you will not be the only one. We haven't even a woman's club in Santa Isabella yet."

She looked very charming, and she evidently was speaking rapidly, because in Elsa Dorn she was seeing for the first time in years a young girl, and the two were near in age to feel an immediate kinship. Elsa was at once delighted with the gay Grete Helling.

While Elsa Dorn alone with Mrs. Helling was inwardly rejoicing that she had got out of this ticklish meeting so well, Bob White was entering the room of Mr. Cook, in which the American, who had already seen the other gentlemen, came to meet him.

"Dear Bob, if you expect some more cousins from Germany, try to find a better time for them to come!"

"Then you know?"

"Of course I know; Möller questioned me beforehand. Only we wanted to surprise you a little. But be quick now! Our visitors have been waiting for half an hour, and I cannot well tell them that your cousin is to blame."

Mr. Cook seemed in an especially good humor. They went into the hall, and at once the American, after excusing himself for his long absence, introduced the newcomers to those who had been there before. "Dr. Frank, you know your colleague Prof. Weigand, do you not? Mr. Van Rhyn, you will be interested to see again your former colleague, Mr. Gerard Vetter. Prof. Zolling, you will find an old college friend in Mr. Eberhard Römer."

The new guests looked more and more amazed. There stood the men who five years before had been reported missing and had been mourned as dead. Here they were, healthy and entirely unlike prisoners held against their will.

The always vivacious Gerhard Vetter was the first to extend his hand to Van Rhyn. "Here's to good comradeship! I am very glad, dear Van Rhyn, that you have been

saved for us, and I look forward to good work with you."

In some embarrassment Van Rhyn replied, "We are simply guests here."

"So were we. You also will remain, all of you. Whoever has once lived in the future no longer desires to go back to the past."

Prof. Zolling cast astonished glances about. Among those present were also Schultz, the noted city planner, Ottomar Goldner, the man with the solar heat idea, and the rapid transit engineer, Grotefeldt, who were likewise introduced.

"I do not know—I have absolutely no reason to doubt your words,—but in these few hours so much that is inexplicable has happened to us. If you really are the men who disappeared at that time—well, there can be no doubt, my colleague Van Rhyn has recognized Mr. Vetter, and I likewise see that Frank is looking with astonished eyes at Prof. Weigand. All these names, which we remembered at home with sorrow and reverence, belong however to men who were our teachers. Yet they look so youthful that we in comparison seem old men."

Now Mr. Cook laughed. "That will change, once you have had a treatment in the sanitarium of Prof. Weigand. We long since came to the conviction that it is nonsensical to die young, nonsensical and wasteful.

"Would anyone let a watch get dirty and then throw it away? In what way is a person any different? On the contrary, he is the best machine in the world and treats himself the worst. Councillor Weigand—I call him 'Councillor', because that was your custom in Germany; here we have no titles—has worked out the study of rejuvenation, which is simply the art of not letting the human system wear out, and our mode of living and our type of dwelling are based on his investigations. He uses no monkey glands or artificial operations." Mr. Cook nodded to them contentedly.

"Seriously, dying is an extravagance. We cannot at present permit it, since we may not be frivolous with the material which we possess. We cannot take the first comer into our union. Anyway, the dying of per-

sons in their so-called best years is simply uneconomical. In the first three or four decades the individual just learns and develops. Real maturity comes in the fifties. What rational mind would use a machine which takes forty years to build and then operates only ten or twenty years? As I said to you, dying or aging before natural exhaustion, at about one hundred and thirty years of age, is reached, is a case of extravagance, and we are not extravagant."

An Incredible City!

AT this speech the gentlemen of the expedition had become dumb. The appearance of their colleagues and the uniformly calm face of Dr. Weigand had robbed them of speech.

Now they went up the elevator together and stood in the garden which surrounded the room in which they had had their coffee.

Mr. Cook said casually, "Unfortunately I must leave now, since I have an important conference this evening in the capital of Puitu."

Zolling looked at him aghast. "In the capital of Puitu?"

"But that is fifteen hundred kilometers, or about as far as from Genoa to Königsberg!"

"It is about the same. Our planes, which are of course constructed on the rocket principle for speedy travel, have a speed of about a thousand kilometers an hour. Now it is eight o'clock. I have an appointment for half past nine and can conveniently come back again. Will you excuse me?"

They went up some steps and emerged on the roof above the coffee room. Here there stood in a sort of booth a table covered with many electric switches.

Mr. White, who had accompanied the two as a silent auditor, pressed a button, and Cook said, "Look out, gentlemen, the plane is coming now."

It was not long before the well-known buzzing sounded in the air. A handsome plane, driven by propellers which were placed above it and operated spirally, appeared and descended vertically upon the platform, and stood motionless at the same

moment that White pressed another button. Mr. Cook got in, once more White worked a lever, and immediately the plane rose vertically into the air.

"This is our distant control. Why do we need pilots? To be sure, I just made the plane rise. High up in the air, Mr. Cook himself will operate the rocket exhausts, from which oxygen and hydrogen flow forth—on the principle of Prof. Oberth—and will shut off the rocket motor at the right time. Then the spiral propellers, which during the rocket flight automatically fold together and lie down, again operate to make possible a convenient landing.—Gentlemen, I should advise you to take a little walk. We have our work even at night. Early tomorrow we may expect to conduct you about."

Mr. White disappeared into the elevator, along with the other gentlemen. The newcomers remained alone. They were too confused to desire further conversation.

SIDE by side they walked along. A regular park came clear to the platform on which the plane had landed, a splendid garden full of blooming fragrant flowers. This layout was broken here and there by deep depressions, over which led handsome bridges of fine wood, having railings carved in the Japanese fashion.

The view downward was strange. The walls of the gaps, that is the walls of the houses, were entirely of glass. They radiated from within a soft light, for this glass was variously colored, rose, green, pale blue. Below lay streets, on which no car, no auto, no bicycle moved to whirl up dust.

People, only people, walked along the pretty gravel walks. These walks ran in pairs, and the people went to the right on one of them and to the left on the other, while between them stood blooming bushes. The sides, near the houses, were also covered with grass plots and blooming shrubs. These streets lay about four stories below the level of the roof-garden.

"An incredible city! Apparently all the houses are of iron and glass and all of the same height. It is clear that these parks represent the flat roofs of the building

blocks, and these bridges permit unhindered passage from one block to another."

Prof. Ortler, who had first behaved as the least impressed, was completely changed. "Then there is no city in the world with so much green space."

Gunppendorf, the geographer and meteorologist, shook his head, saying, "This cannot be a fraud. This must be a city. But here is a perfectly splendid air, pure mountain air, full of ozone. Where are the odors of the great city?"

Zolling stood still. "Gentlemen, I cannot stand any more. This is too much for my powers of comprehension. I suggest that we go to our rooms and collect our thoughts again."

At the same moment there could be seen before them, in the middle of the path on which they were walking between the palms, exactly the same luminous circle which they had seen in their rooms, when the door had opened for them to bathe.

Frank cried almost angrily, "Here apparently all our conversation is overheard. Naturally you have no more idea than I as to where the hotel might be. And at once this circle is here. See, it is moving slowly along the walk. Now it stands still, and now it moves on further. It is just like a dog, waiting for his master."

"Then let us follow it confidently!"

CHAPTER VI.

More Wonderings!

THE men followed the guiding light, which led them over several bridges and past the airport, and then found themselves unexpectedly before a door which opened to the room where they had eaten. At once the door closed behind them. They were in a room with indirect lighting, not too bright but just cheerful, and in the center of the floor was a table with bottles of wine, soda, cakes, cigarettes, cigars, and a lighter. Around the table were armchairs.

Ortler cried out, "If only we were not always listened to!"

At once a loud speaker sounded: "You only need to indicate it, and you will be

not be listened to and will be entirely unobserved. If you want anything, please use the switchboard!"

"Well then, we must believe it."

The men seated themselves.

"What do you say to all this?"

"Nothing at all. I think it would be best—I think none of us feels inclined to sleep—for us to use the evening in perusing the little documents Mr. Cook gave us. Perhaps we can learn something from them about this strange city."

"A person cannot read by this light."

"There in the corner is a lamp."

Now for the first time they perceived that in the corner of the room stood a remarkable apparatus, a little cabinet. At the front was a desk, and over it hung an electric light bulb, which radiated a strangely bright and fluorescent light.

"Then we must take turns reading."

"First we will see!"

Van Rhyn stepped over to it, took from his pocket a postcard which he had received from home while in San Francisco, shoved it under the bulb, and tried to read.

But at the same moment he heard the motion of wheels in the cabinet, and immediately a loud voice sounded through the room: "Dear husband! I am sending you my heartiest greetings. Please do not forget to wear good dry stockings, and don't put on six shirts at the same time again . . ."

The professor quickly drew back the card and the others laughed aloud, while Van Rhyn smiled in embarrassment.

"What is it, anyway?"

Van Rhyn put the card in his pocket and without answering laid under the bulb an old piece of newspaper, in which his passport was wrapped. At once the newspaper was read aloud.

"That is—the devil take the fellow!"

"But explain to us!"

"What is that? That is—gentlemen, there represents what I have been sitting in Berlin for years and years, working on—my life task. Now I come here—No, pinch my arm, give me a box on the ear! I want to wake up at last."

"But . . ."

"We are asleep! We are dreaming! Per-

haps we are insane! No, I do not mean you, of course you are not here, I am simply dreaming of you all."

"I beg your pardon"

"I pardon nothing! I am dreaming of you all, and I can shout all I want. Hello! Hello! I want to wake up!"

At the same time he danced around the room, pinched himself, nipped his cheeks, and made the maddest attempts to wake himself from his supposed sleep.

The four professors watched with increasing astonishment the St. Vitus dance performed by Prof. Van Rhyn. Then Dr. Frank stepped close beside him. "But, colleague!"

"Why do you say 'colleague'?"

"You are not dreaming, after all."

"How do you know whether I am dreaming, you who are only a figure in my dream?"

"Listen! Shall I pull out a tooth, or shall I cut out your appendix, so that you may see that we are all awake?" Dr. Frank reached in his pocket and brought out a little surgical case.

Van Rhyn looked at it. "Doctor—are we really awake?"

"Certainly. But explain to us what that thing is!"

"Doctor, if you had pondered over something all your life, say an impossible operation, and now—here—in this unreal city you suddenly saw that another person has already solved the problem . . ."

"**P**ERHAPS Dr. Weigand, magician and rejuvenator, will do that to me tomorrow. Now, see here, drink this ipecac! It is horribly bitter. If you taste that—well, it is a fact known of old that nobody can taste in a dream."

"Is that so?"

"You know it yourself."

"Give me the stuff!"

Frank held out to him a large glass.

"Your health! Brr—brrrrr! The devil!"

"Do you see that you are awake?"

"Doctor, I accuse you of attempted murder. My whole stomach is turning over."

"There, have you ever seen a person who

dreamed that his stomach was turning over?"

"If you have any mercy, bring me a glass of soda water."

"Now everything is all right agan."

"Gentlemen, we are then admittedly alive. If I had dreamed that, I should certainly have waked up. So listen! This is a most incredibly practical apparatus. You know that attempts have already been made to convert the human voice by the use of selenium cells and all possible sensitive diaphragms into light and then this light into force. For instance, it must be theoretically possible to build a typewriter which automatically writes in response to vocal dictation."

"There surely is one here."

"See, this thing here is exactly the opposite, a machine which converts written or printed characters into light rays and then into sound, by some process at present unknown to me. You have just seen that the apparatus read aloud the postcard and the newspaper."

"Magnificent!"

"Unbelievably magnificent! Actually these things are my ideas. Once I spoke of them in my lectures, which this Mr. Vetter attended, as a sort of last and far away aim of our knowledge. I have vainly worked at it, and now the thing is here. He has made it and put it in our room, for us."

"Truly magnificent. This gives a second life to the blind!"

"Yes, for one having the money to get such a thing. But never mind that; I should like very much to take the apparatus apart and study it."

"Do not do that! I think we should use it and make it read to us the history of Santa Scientia."

"Of course, you are right. I will sit by the apparatus and turn the pages."

The gentlemen sat down. Van Rhyn shoved the little book under the bulb and clamped it into the steel grips on the desk.

At once there began very loudly and plainly the reading aloud of the manuscript, which proved to be a journal. The professor was moreover spared the trou-

ble of turning the pages; when he was about to take hold of one, the leaf turned over automatically, likewise guided by a spring steel clamp.

All listened attentively to the journal which was to reveal to them the history of the marvelous city. Instead of being on the little yacht, with almost certain death before them, struggling against the raging hurricane, they were now sitting in a comfortable room on soft armchairs, seeing and hearing a most remarkable story.

Yes, they both saw and heard, for the book which Mr. Cook had given them contained in the middle of each page a picture. While the text was being read aloud, there appeared at the same time by means of an excellent apparatus like a televisior the appropriate picture, appearing above the apparatus on a ground glass plate. This gave a perfect impression of a lecture illustrated by pictures.

This was the content of the lecture:

* * *

HOW SANTA SCIENTIA ORIGINATED

The congress in Chicago, which was occupying itself with the idea supporting financially the greatest inventions and inventors on earth, was over. Actual excitement had been aroused only by the speech of Benjamin Cook.

"Gentlemen, all this is merely a half way measure. What is the use of a man's devoting his whole life to a great new idea, if he receives a few thousand dollars? He is bound to his surroundings, chained to every-day life, watched prematurely by millions of eyes. How much has been wrecked by being brought to publicity before it was properly tried out! How many hopes have been vainly awakened, how many men have given up their plans in bitterness!

"Everything will be in vain, as long as it is impossible to find some little place where great minds may work, quite apart from the rest of the world, without being fettered by time and money, converting their ideas into reality. Let us found somewhere on a lonely island—a sort of world university—not for teaching but for doing, on which city planners may realize their magnificent plans, on which the scientists may

pursue their investigations. Indeed, that will cost many millions. I myself am ready to contribute the first."

Beneath the Sea

THE proposal had been ridiculed. As is usual with such meetings, it had broken up with fine words. Far at the back had sat, unnoticed by the rest, a very old gentleman, a man who a few years before had been an eminent scientist and who for a special reason was mocked at also. It was the aged Professor Alesius, who had asserted that he had found the treasure of the Incas and had hidden it again.

That evening, when Benjamin Cook was already packing his trunk at the hotel, a visitor was announced: Professor Alesius.

Cook had chanced to notice that the latter had been the only one who had nodded vigorously at his words during the meeting.

"What can I do for you?" he asked his visitor.

"I simply wanted to tell you that your proposal delighted me."

Cook shrugged his shoulders, and the professor stepped nearer. "Perhaps I bring you what you seek. I should like to found the world university with you."

Cook looked at him sympathetically. He had also heard that the old gentleman was considered no longer mentally responsible.

He laughed. "Have you the millions?"

Alesius nodded. "The millions and also the island."

Cook was becoming still more nervous, but Alesius said very seriously: "I think there is a treasure of a hundred million dollars or more, which fate has entrusted to me. When I was by chance on the desolate Iguana Island, when I was already despairing of saving my life, I discovered the treasure of gold and jewels which Ruminjahui, the general of Atahualpa, the last Inca emperor, piled about the grave of his lord."

Cook gave him a blank look, but Alesius continued: "I am not weak-minded, though I know people believe it. I am purposely deluding the world. I saw the impression produced by my report. What

would have become of the money? Perhaps the state of Puitu would have paid its debts with it, or there might have been Iguana Island stocks on the market.

"Through the centuries the treasure has remained in sacred peace. No one knows of it but myself, no one knows how to find it. It was intended to be buried. The bold which fidelity placed about the dead shall not be desecrated. But you have a plan which can benefit the world. Together with you—that is, in case you affirm in writing that you will use it exclusively in your scientific plans—I will bring it to light."

The old man had spoken with assurance and enthusiasm, and Cook was beginning to waver. "Will you show me the treasure?"

"To you alone."

"When?"

"We can leave this very day, but it must be in secret. Time is pressing, and I am old."

With the night train the two men set out for Frisco. They had only one companion, Bob White, the young secretary of Cook, who had already given his word of honor to maintain complete silence about this project.

In Frisco Mr. Moller, the head of the firm of Smith & Co., was taken into their confidence except that he was not told of the treasure. He was simply commissioned to fit out a little yacht.

THE weather was favorable. In shortly over a week the desolate islands lay before them, barren coasts from whose midst rose volcanic cones. Brown lava and heaps of rubble yielded under the human foot and made every step difficult. Wild, rough reefs rose grey and bare from the foam of the surf.

They anchored in a bay. The crew of the ship wondered not a little. It was an uncanny bay. Ancient partly petrified fragments of ships lay on the beach, covered with green algae and dead mussels.

"It is an ancient pirate harbor. Barthelmy Roberts, the king of the filibusters, who was later tricked by brave Captain Ogle of the *Swallow*, used to have his place of refuge here."

They landed and a tent was set up. With serious eyes Prof. Alesius wandered along the shore. Then he stopped at a little lake. It was no inland lake, but the edge of a crater, one side of which the sea had torn away. Thus there had been formed an almost circular bay, blocked to ships by a large bar.

Cook and White looked in surprise at the old man.

"I have found the place."

The American started at hearing this. "Really?"

"Six years have passed. The sea has been at work, and the grotto which we must enter is flooded with water. Probably this part of the island has sunk."

"What is actually to be done?" asked Cook.

"We must dive," replied Prof. Alesius.

The diving suits were brought.

"Do you want to?"

Cook admired the will power of the old man. The three men put on diving suits. A small boat was brought into the bay, in which they rowed out to the middle. They had a solemn feeling. At the shore there sat on a stone a remarkable monster, a giant iguana, reminding them of the dragons of primeval times, looking at them motionlessly with its serious eyes.

Now the two companions again doubted the sanity of the professor, for he nodded in almost friendly fashion to the iguana. "Are you still here, old friend lizard? Do you bring me good fortune? You showed me the way before."

A steel ladder was lowered deep into the water, and Alesius was the first to put on a diving helmet. His weak figure almost collapsed under the weight, but when he was under water he did not feel it. The other two followed, while above stood the men of the crew, tending to the oxygen supply and wondering about what was going on.

The steps of the ladder ended. They now stood six meters below the surface on a stony bottom. They sat down for a moment, while a new world opened up to them. They no longer felt the weight of the heavy helmets. There was a brilliance of color

about them, splendid sea anemones, gay coral, strange fish with wonderful wing-like fins, which whirled about them as delicately as parrot feathers.

Little short ugly fish with great mouths sped up, knowing no fear, and snapped at their garments with soft harmless lips. There were armies of tiny little animals struggling there: starfish, jellyfish, cuttlefish. Great crabs emitted grey clouds and changed the clear water for minutes at a time into opaque mist. But over all these wonders lay a sacred stillness, while the sunbeams shone down from above very dully and the keel of the boat lay above them like a black shadow.

CHAPTER VII.

A Case of Kidnaping

THE eyes of the men were becoming accustomed to the dull light. Alesius arose and walked about. He nodded. It looked uncanny to see the great diving helmet move.

Before them was an opening. It almost looked as though there were a stone house standing here at the bottom of the sea. When they approached and lighted their searchlight, there shot out of the dark opening thousands of fish.

Back of the hole was a stairway, a regular stairway made of stone slabs. Was it the work of man? Had nature formed it? They began to descend the steps. The thin tubes which brought them air, and were their only means of keeping alive here, stretched out further and further. Ahead of them a great octopus was dragging its way down the stairs with its mighty spongy limbs. While Alesius walked down with a confident step, the other two followed hesitantly.

They reached a mighty grotto. For some moments the professor switched off the light. Here it was perfectly dark, for the gleam of the sun never entered. Yet there was life here also, uncanny silent life. At the very bottom, far below them, for the grotto evidently went down much further, faint lights whisked about. These were

deep sea fish. They held before them little glowing bodies on long antennae and with these attracted still smaller organisms, which thus fell prey to them.

Again the searchlight shone forth, the lights in the depths paled, and Alesius climbed up other steps. They saw him collapse under the weight of his helmet, an indication that he had again risen above the surface of the water within the grotto. He sat down and took off his helmet. The others imitated him. Now they saw that they had almost reached the end of their air-pipes. They gave a prearranged electric signal to shut off the air temporarily.

"We are all right now. We will rest here," said the professor.

His two companions were more and more impressed by the intellectual greatness of the old man. The grotto even now still arched high above them. It was remarkable to note that there was good air here, even though the space was a little confined. When the searchlight swept the walls, they saw that ancient paintings were there between the stalactites and that the remains of weapons and puzzling objects hung on rusty hooks half destroyed by the water.

"White," gasped the professor painfully, "You are the youngest of us. There are three shafts going up from here. The center one is the right one." The exertion had been too great, and the old man sank back unconscious.

They gave him wine, and he opened his eyes again. "Up there! Up there! I'll wait down here. My bequest! I have your word."

The two did not wish to leave him alone, but his imperious gesture made them obey. They untied the rope which the professor had made White bring, wrapped it around his body and tied themselves together. Fastening on their water-tight lanterns, they began the fearful ascent.

"Here are some steps."

They were ancient slippery steps which rose in the form of a winding stair. Hours passed, but the men no longer despaired of success.

Finally they saw the faint glimmer of light, from some unseen source. They stood

in a chamber that had once been cut and smoothed by human hands—a room without an exit. In the center, flooded by light which came through a crack in the rock, sat a solemn golden figure on a throne. Half reclining, wrapped in golden garments, covered with jewels, was a statue of Atahualpa, the last Inca emperor. About him lay piled up bars of gleaming gold and an infinite treasure of the most splendid precious stones.

The two stood in dumb amazement.

"The treasure of the Incas!"

"Millions and more millions!"

They collected themselves. "We must no longer leave the professor alone."

Still impressed by the wonders of the grotto, full of reverent awe, they began the fearful descent.

HOURS had passed before they reached the lower grotto again. Alesius lay stretched out where they had left him.

Cook bent over him, listened to his heart, and sprang up horrified. "He is dead! It was too much for the old man."

They knelt beside him.

"He knew that time was pressing, that his end was at hand. He has left his treasure to us."

Cook arose. One would hardly have thought it possible for this man, who gave the impression of a cold business man, to be able to weep. "I swear that I shall keep my word. You swear also!"

He said it in a commanding tone, and White gave him his hand. "I swear it!"

It was a solemn moment: the two men in the cave beside the dead man, far below the little lights of the lower world, busily whisking this way and that, up above the rocky vault with the great secret of bygone centuries, and outside the roar of the waves as they beat against the rock.

Again they got on board, after once more putting on their helmets and making the subterranean trip a second time. Alesius had come with them as a corpse. They had carried him between them and had guarded his cold body from the greedy fish.

* * *

Mr. Cook and his secretary White were

again in Frisco, sitting in the private office of Smith and Co., discussing matters with the owner of the company, Mr. William Möller.

"What now?"

Möller laughed loudly. "You seem to me just like a person who has suddenly won a big lottery and does not know what he is to do with it."

"Let us rather say, like a politician who has always grumbled and suddenly become foreign minister of a great state. I have the money, the bequest; I have purchased the miserable Iguana Island with all rights from the government of Puitu and paid cash. But what now? I want to lose no time."

The ever prudent Möller reflected. "What do you need?"

"Clever men, geniuses. Can you furnish them?"

"Smith & Co. furnishes everything. You have a barren island, so you must first become acquainted with its minerals and know how they are to be obtained. For this the right man is Eberhard Römer, who even wants to mine the moon. You must have a physician to look after the main thing, health. Take the young cancer investigator, Dr. Weigand! You need ingenious engineers; how about the Swiss Ottomar Goldner and the Berlin electro-technician Vetter. You will want to build a city; I think of Otto Schultz in Berlin and some others, such as the rapid transit expert Grotefendt. These would be the right men; they are geniuses who are not recognized at home."

"But how can I engage them? Then it will at once be recognized that . . ."

"Do not hire them!"

"What then?"

"Steal them!"

"You are—"

"By no means insane, as you are about to remark most kindly. Steal them, very simply steal them, or conscript them, as the soldier king of Prussia called it, when he collected his tall fellows from all over the world. 'The end justifies the means,' says a proverb."

"Are you speaking seriously?"

"We are here to do business, even if it

is ideal business. I will do it all right. First we will carry them off by force, bring them here, explain everything to them, and if they actually are geniuses, then they will be enthusiastic."

"And if they are not?"

"We must send them away before they have seen anything."

"Will you do this?"

"With pleasure, if you give me the money for it."

This was the first conference. Six weeks later a second one followed, much stormier than the first, for the six men had actually been carried off in airplanes, autos, submarines, and private yachts, and had been temporarily calmed after much trouble. On meeting in Frisco, where they had been brought during the night, they screamed execrations at Cook and Moller and threatened to call in the police, until finally Cook managed to speak.

"One moment, gentlemen, listen to me!"

The Founding of Santa Scientia

HE then delivered a speech in which he revealed his plan, and the men followed his words with increasing excitement.

The first to collect himself was Schultz. "What, am I to build such a city as I have imagined, as I have described it in my monograph?"

"Exactly so."

"That costs millions."

"We have them."

Romer was striding back and forth in the room. "And I? What shall I do? Go to the moon?"

"Not at present, but you are to make a desert island, a volcanic island, into a fruitful land."

"Just listen; if one properly cultivates and irrigates such volcanic soil, then it will be splendid."

"All right!"

"What is there? Gold? Silver? Radium?"

"I do not know. You shall find out."

Prof. Weigand likewise sprang up. "A cancer hospital?"

"What you will. At any rate a complete

laboratory in which you can peacefully consider all problems, including perhaps rejuvenation."

"Can I make the new city hygienic, as I wish?"

"That is your chief task."

"Money?"

"That does not matter."

The engineers were speaking at the same time. "Is there water for a power plant?"

"I don't know. At any rate, there is plenty of volcanic power."

"Colleague Vetter, what do you think of a volcanic heating plant, a giant steam engine using a volcano for perpetual motion?"

Vetter nodded. "We could also produce power from the waves of the ocean."

Grotfendt sadly shook his head. "One cannot use express trains on a little island."

"Then run your lines right through the ocean."

"My tube railway—my—" His voice almost cracked.

The six men who had come angry had lost all their wrath. They had completely forgotten where they were. They no longer bothered at all about Moller or Cook or White, who could hardly take shorthand fast enough to put down what they said. They were so buried in their new fantastic plans that they forgot everything. Because their great minds reached out in similar ways, they speedily became friends.

But suddenly Schutz sprang up in excitement and stared at Cook in horror. "Is all this true?"

"Of course."

"It really is not just a fraud?"

"Certainly not."

"Can you prove it to us?"

"As soon as you have pledged yourselves for five years and have given your word of honor that you will in no event reveal anything of what we show you before that lapse of time, we shall set out for the island."

"Here is my hand!"

"I agree!"

"I too!"

In a moment all the signatures were secured.

"Can we go now? I cannot stand it any more, I must go out of doors, I must think it over."

"Unfortunately that cannot be. Nobody must see you in Frisco. For now you must remain missing from the world, otherwise curiosity will spoil everything."

"But—"

"Outside are three autos. In the night we shall go to Los Angeles. We have a yacht there. If you wish, tomorrow morning we shall be on our way to the Iguana Island."

"Iguana Island? That is no name for such a place as we contemplate."

"Of course, we must find another."

Weigand had been sitting very quiet and wrapped in thought. "Is it your sacred purpose to make no material gain from the matter?"

"Only ideal gain for humanity, for science."

Weigand stood seriously in the midst of them. "Gentlemen, then there is only one name under which we can unite: 'Santa Scientia'—sacred knowledge."

"Bravo!"

COOK now stepped to the center. "Gentlemen, I had thought of another name, Alesia, in honor of the noble professor, the first to give his life for his ideal. But you are right, Santa Scientia, the name is a pledge. Gentlemen, let us be off to Santa Scientia!"

Six weeks passed. A few days after the little expedition with the scientists had landed on Iguana Island, another ship arrived, a perfectly ordinary ship with Chinese workmen on board. In a short time they built a number of sheet iron shacks on the shore, delivered a great amount of provisions and great piles of all imaginable machine parts and apparatus, after which they went away again.

Soon afterward there came a yacht, the private yacht of Cook, now making its second trip to the island, with the ten foremen and engineers whom Möller's agents had likewise kidnaped. They had not indeed been completely initiated, but they

had been induced by the high pay to sign up for five years.

The yacht went away, and for a full six months it did not appear. Cook and his secretary were supposed to have gone to Europe. Mr. Möller carried on the business of Smith & Co., in the old way, as though there were no Iguana Island at all, and the disappearance of the sixteen men was slowly forgotten in the world.

To make up for this, there was all the more diligent work in the little settlement of sheet iron shacks, which Cook half jestingly called "the city of Isabella." Each of the young scientists had one or two men with him. First the engineer Goldner and Mr. Grotendorf had blasted a horizontal tunnel which led straight into the flooded cave, so that there was no need to reach it by the sea.

Then White and Cook had again ascended the fearful route into the grotto of the Inca and had fetched on the return trip a great amount of precious stones. The gold ingots they temporarily left there. The whole Inca treasure was not to be brought down until a proper treasure chamber had been built. When the six scientists saw what the two had brought with them, the last vestiges of their doubts vanished.

If a person had come here quite unsuspectingly, say as a traveller, he would have seen a most wonderful sight. In a great sheet iron shed, in the fearful head, there sat in bathing suits Otto Schultz, the city planner, and Weigand, who had interrupted his cancer investigations and had become simply a sanitary expert. Before them were immense plans; they drew, discussed, disagreed, and agreed again. And what evolved under their fingers was the plan of a strange city, such as the world had never before seen.

In the early morning the engineer Romer would be climbing around in the lava fields with the Swiss Goldner, having blast-holes dug. At the shore Mr. Vetter would be setting up electrical apparatus and making experiments. Each evening all the gentlemen came together in the largest house, which they had named the "Hotel," because

there a colored cook managed matters and prepared their evening meal.

CHAPTER VIII.

A New Day

EXACTLY six months later there was again a great meeting.

"We must have a harbor."

"It must not be here. No one should see what we are doing."

"I had in mind the reef which lies about 500 kilometers off from this island. There is even a natural harbor there."

Grotefendt nodded. "Then I will run the first tube railway there."

"Of course," Cook said quite indifferently, as though it were a commonplace matter.

"We must have electric power."

"Yes," said Vetter. "We will try to use for this the hot vapors of the geyser which is very near the old crater."

"Very good."

"The ground is very fertile, if it is disintegrated by water and machine power, which first crushes the lava and breaks up the rubble."

"I am giving you the electric current for this by my steam engines."

"I need only a laboratory and invalids."

"With Prof. Weigand's help I have completed the plans for an ideal city."

"What do we need now?"

"People! It is not possible for the sixteen of us, or eighteen counting Mr. White and yourself, to complete the work."

"Then Moller must help again."

"We need hundreds, thousands of people."

"First a hundred, then a thousand, if we can feed them."

"But capable men."

"Only the fittest. Moller must get them."

"Steal them again?"

"That is up to him."

Mr. Cook went into his so-called office and wrote an order as though he were ordering six carloads of oleomargarine. "Messrs. Smith & Co., Frisco. Please deliver us as soon as possible one hundred

capable trained workers and two hundred Chinese coolies, also provisions for six months; and some sheet iron houses."

Each month a plane came over from Frisco, piloted by a man who had been initiated into the secret. Thus far they had not even ventured to build a radio station, lest by chance other receivers might pick up something.

This time the plane returned in three days, bringing a letter. "Mr. Cook, Santa Scientia. Thank you for your order. Delivery within thirty days. Smith & Co."

Cook laughed. "We can rely on Möller."

* * *

There was the soft ringing of a bell in the room in which the professors sat. The light went out, the pictures disappeared, and the reading machine was silent. The men wiped the sweat from their brows, stood up, and stretched their limbs.

"Here everything seems to be rational. The apparatus is cleverer than we. It is already after midnight."

Zolling wiped his forehead. "I am all confustd. That sounded like a story from the Arabian Nights."

"Then that was the beginning?"

"We will save the continuation for tomorrow."

"I should like a breath of air."

A door had already opened. They stepped outside. Balmy odors were wafted toward them. Fountains plashed beneath palm trees. A dull light, which did not show any objects clearly, lay over the mysterious city.

After some time they returned to the room.

"Can you sleep?"

"It is impossible."

On the table in the middle stood six glasses of a foaming beverage.

"Here they truly think of everything."

They drank the pleasantly cool lemonade. At the same moment the light again illuminated the ground glass plate. "Good night, gentlemen!" appeared there.

Zolling stretched. "Suddenly I have become sleepy."

The men seated themselves in the chairs, travelled to their rooms, lay down, and at

ance went to sleep, while the mysterious light continued to shine over the city of Isabella and its wonders.

AT six o'clock sharp the next morning there sounded in the rooms of the members of the ocean expedition an insistent buzzing. When the men, who had slept excellently, looked up, each saw before his bed a dark haired boy standing. Indeed these were not living boys but ornamental figures, apparently of bronze, which smiled and held out to them menu cards on which were all sorts of questions: "Coffee? Tea? Chocolate? ? Roast meat? Poached egg and ham? Fish? Cold meat? Marmalade?"

On the menu hung a pencil, and the face of the artificial servant was so pleased, the lips moved so naturally, and the great eyes rolled so comically in the dark face, that the gentlemen could not help laughing. With pleasure they checked what they checked what they wished. Then the dumb servant rolled away, returning again through a little door in the wall which opened only for this purpose. This time each brought on a tray the desired food, and by it lay a notice: "Sam remains until the button on his shoulder is pressed."

The men breakfasted, bathed, and dressed. Zolling asked Frank, "Did a Moorish boy appear to you also?"

"Moorish boy? No, a little metal Chinese."

"Certainly the first servant whose watching me did not disturb my eating."

"You are right about that."

Zolling shook his head. "Nevertheless, this artificial Moorish boy has not pleased me. It is something bizarre, which does not go well with the technical clarity of all we have seen."

Soon there again appeared an inscription on the glass plate above the desk. "If the gentlemen are ready, will they please sit in the chairs?"

This time they did it as though it were perfectly natural, and a few minutes later they were all together in the reception hall, which seemed to be the central point of the building.

Bob White came to meet them. "Did you sleep well?"

"Excellently."

"I must beg your pardon."

"What for?"

"I can see by Mr. Zolling's face that he did not like the Moorish boy."

Frank laughed. "It was a good joke."

"Quite right, sir. Even in the mystery plays of the middle ages there used to be a farce at the end, in which the clowns performed. When there is work all day long, our experts sometimes feel the need of giving rein to their fancy and making such playthings. But now I should like to show you some of our plants. I must first preface my remarks. You will see a city which could be equipped for hundreds of thousands, but which has still hardly any inhabitants. I want to point out that we do not want to make an industrial city; we do not want to compete with anyone.

"In all that we do here we are a model, a proof that the thing can be done, an experimental laboratory, a university if you like, and for the future a constant example of how the world can and must look in centuries to come. If other ingenious persons come and prove to us that our ideas have already been caught up with, then we shall not hesitate for a moment to pull the city down and replace it by a better one."

The scientists looked at each other in amazement, while Bob went on: "This hall, which you probably think goes through four stories, really has ten."

In the middle of the tower-like hall was a round platform, which slowly rose like a chain-drive elevator, making a second exactly similar platform arise from the depths, which then made way for a third. These three platforms were connected by handsome pillars, and except for four openings, which connected with radial passages, were enclosed by a beautiful bronze grating.

"See, this elevator forms the exact center of Isabella, as we still call our city to-day. At the very bottom, below the lowest story, is a smaller hall, in which is the end of our sea railway, on which you arrived yesterday."

A Gigantic Plan

THE men got on the elevator, Bob White pressed a button, and it slowly sank.

"We are now in the lowest basement. You see that from here radial lines of tracks run in all directions. Those are our electric express lines. In view of the smallness of our island they are very short, but in a real metropolis they would run far out into the country. This is, as it were, the long distance railway station. It is obvious that we provide only one class and that the cars are equipped with the greatest comfort and conveniences.

"To attain great speed we use the gyroscope system, but we are also experimenting with rocket propulsion. For the moment I will just show the arrangement. We travel at a speed of 200 kilometers. But we have no heavy locomotives and operate each wheel-axle by a special motor. Thus the force is cumulative, and we have no long slow trains. It is just striking the hour. At exactly the same time trains are starting in all directions. We see to it that all districts are built up evenly, so the same traffic prevails everywhere.

"The time table is perfectly uniform, likewise the running time of all trains, since everywhere the stations are equally far apart and all lines are the same length. This can all be arranged in rebuilding a state as well as a city. Of course we have no personnel on the trains. Our machines are the crews, and everything is done automatically. We have no switches to set, since each train keeps its direct line.

"Crossings of other lines are always tunnels below or above. Each signal is automatically given and automatically obeyed by the train. The one person who accompanies each train is there simply to take action in an unforeseen emergency, but otherwise he has nothing to do with the operation. We use for this work old people who have the necessary knowledge and who rest during the trips. This is a sort of provision for the aged, because physical strength is not needed for this work. Neither is it necessary to be constantly alert. The machines look after that."

The men went to the next higher story, which was level with the ground.

"Here are the so-called tram lines for the city and its immediate surroundings. There are neither cars nor trains, merely five bands gliding along side by side, which are arranged in step formation and go at step, in the middle of the tunnel, has seats and glides fastest, each one being slower.

"From the slowest, one can without difficulty step off on to the fixed pavement or vice versa. If you sit in the middle, however, you travel at a speed far surpassing that of any street railway. On the other side of the tunnel the bands go the opposite way. These lines also go straight out, in every street. You already have seen that our building blocks are not quadrangular but segments of circles. This place is the meeting point of all the streets. In the curved connection streets or rather circles, other lines run a story deeper down. There are of course no long distance railways there. Now, please, one story higher!"

They now found themselves at the height of the first story above the ground. There they saw the auto roads.

"The deuce, those cars are making good time! They must be going at least two hundred kilometers an hour."

"Surely."

"Do your motors accomplish that?"

"Absolutely not. The people are not going any faster than you do, but the road has just the same bands as the tramway street below. You see, there is a dividing wall half the height of the tunnel running through the middle. That divides the traffic going in different directions. The first band glides very slowly. It is not at all hard to get from the parking place here in the middle to this band. Then it takes some skill by a quick bit of side steering to reach the next band which already has a fairly high speed. In the middle the man drives at a speed of about one hundred kilometers an hour and is at the same time carried by the band at the same speed, making two hundred. There is little risk in this. These gliding bands make the autos always go in line. There is no driving in the side streets, hence there are no crossings. Skidding can-

not occur on the rough bands, and a driver who is not skillful enough to steer his auto from band to band is not allowed to drive."

IN fact the autos, in spite of their speed and their great number, were all going along in line at proper intervals.

"Exactly the same is true of the cycle road a story higher; there too the gliding bands make the going easy."

Dr. Frank laughed. "Yet it is here the same as everywhere; the poor pedestrian is the worst looked after."

"How so?"

"There are no gliding bands for him."

"That is intentional. We provide our citizens with all means of transportation free, of course. It is to our advantage that no one delays. Transportation is given the inhabitants here as you provide water and of travelling, it is to be assumed that he wants to walk for the sake of walking, and light. If anyone does not use these means for him there are the pleasant gravel walks between the grass plots—Hello, our auto is ready! I should just like to mention that these elevators of course go to all floors and end up in the twelfth story of this central house. You will also go there; that is where we have our airport for all our planes."

While the men were getting into the great auto, which had seats for all of them, Bob White went on: "Even if we do not want to carry on any business in Santa Scientia, yet we hope that very soon machines will be working in all our shops. We will set in operation every type of industry present on earth and procure for it the best minds, in order to make it progress. But these factories are only to serve as places of instruction. They will hurt no one. The university is therefore to have added to it a mighty technical school with branches for each industry. With our productions we shall make just enough profit to cover our expenses, for even Inca treasures are not inexhaustible."

They were now going through splendidly cultivated fields.

"It is obvious that we get much from what nature gives us. In large crushing mills we have the lava ground up, and it

becomes excellent top-soil. Absolutely no special minerals have been discovered, but we have demonstrated that even the most desert of lands will produce by the aid of machines and the use of chemistry. Thus we raise man to his position of dignity, in that he only thinks and guides, while all merely physical work is considered a waste of his intellect. Irrigating is done artificially, with machines to do the work."

"Do you operate your machines by volcanic forces?"

"We did for a time but then we stopped. You will get more details about it, if you continue reading our story tonight. I am now taking you to the immense power plant which directly converts the waves of the ocean into electrical energy. This is a force which is obtainable everywhere, just as we get nitrogen from the air and heat from the sun's rays.

"Certainly the volcanic power still present on the earth is sufficient to heat almost the entire world by means of long distance heating plants—the geysers of Yellowstone Park alone might provide a part of the United States with heat. But these are transitory values, for the volcanic forces will some day be gone.

"Once we are no longer compelled to thus conceal ourselves from the eyes of the world—and your presence is to be a sort of general test for us—we shall ask the government of Alaska for permission to investigate the Valley of Ten Thousand Smokes. This was discovered after the eruption of the volcano Katmai, which buried the city of Kodiak. We would so use the heat forces there that perhaps the entire region of Alaska, now covered with snow and ice, might be warmed by them, though maybe only for a few centuries.

"People are complaining about the crowding of the earth but are using a wasteful kind of agriculture. The earth still possesses infinite expanses which are not used at all. Think of the tropics, of the huge areas in Guatemala and Honduras, where formerly flourishing Indian estates showed high civilization and which are well suited for it, if once we change from human labor to machines."

CHAPTER IX.

A Human Repair Shop

THE men were now going along a fine road by the shore. Before them they saw a lovely valley. Palm groves waved their "feather dusters", brilliant parrots swayed in the branches.

"Here there lived the great iguanas and the giant tortoises. Unfortunately we drove them away, except in a place which we purposely leave wild and seldom enter. This natural park, which is a reminder of the former condition of the whole island, is also to serve as a model."

On an airy height there rose an extensive glass building.

"This is the laboratory and hospital of Prof. Weigand, who is impatiently waiting to show his results to you all, especially to Dr. Frank. I need not tell you that we use everywhere a new type of glass, which allows the ultra-violet rays to pass through. Hence even the inner rooms get full radiation from the sun, which here is especially abundant.

"Now indeed you see above us a light cloud. It is artificial and simply serves to lessen the excessive heat of the noon hours. On the other hand, during the rainy months our territory and especially the city are lighted by electric lights, having special radiation which gives the same effect as the sun. There is still a great problem to be solved. By our irrigation we can produce artificial rain. We shall not attain our goal until we can adjust the climate and weather perfectly."

The men, whose astonished faces had long since shown no doubts, entered the great glass house. On the veranda, which offered a truly gorgeous view of the sea, Prof. Weigand came to meet them. "May I first offer you some refreshment?"

"Later, later. We are too eager to know things."

"Even with us you see only a beginning," said Weigand. "Our knowledge unfortunately still remains fragmentary. I have not yet succeeded in making a man. It is

not so hard about the limbs, but the brain is still an unsolved puzzle."

The rooms in which the invalids lay were high and made entirely of glass and iron.

"I have a hard time; I even have to have my invalids stolen for me. Our people seldom give us an opportunity for us to show our skill, unless some accident occurs. I shall have to get your personal histories, as I do that of every new arrival."

Frank laughed. "Is that all? My name is—"

"No, I do not mean that. We have to know about everyone, that is about his body. It is natural that I have here in this file"—they were now in the office—"a record of each one, namely X-ray pictures by the latest process. Look, this is the internal appearance of Mr. White. These tables represent the heart action during and after work, and here is the essential blood test. You know the various groups of blood composition. It is of infinite importance to know this for future use. What is the use of my putting a new knee joint in a victim, if it comes from a person with another kind of blood! It just does not work."

Frank shook his head. "A new knee joint?"

"Look here!" Prof. Weigand led them into an adjoining room. "It is wasteful to discard a whole person as unusable, or let us say the failure of a single organ caused his death. If a person dies of weak heart, his limbs are still sound. Here you see all joints, here larynxes, here whole bones, here a stomach, and here kidneys. If you examine the vessels more closely, you will see that this solitary stomach is digesting, that this heart is beating."

"Are those—?"

"They are mostly experiments with animals, but there are also a number of human organs among them."

"You—"

"No, I am no desecrator of dead bodies. But there are here in our ideal city many persons who desire that after their death their individual organs shall benefit others who are still alive. This is not at all a violation and is actually no different from a

blood transfusion and has already saved many lives.

"In the big accident on the mountain two years ago one of our best mechanics was nearly crushed. It was a blessing that I had a kidney on hand in a nutrient liquid. It was grafted in, and it has been working perfectly for two years. A knee joint, which I got from a man whose leg I had to amputate the first year, has already been doing duty for three years in another body."

"THEN you have here—"

"A repair establishment for human beings, with the necessary spare parts. But as I said, it is a question of the right blood groups. During the world war this was not properly heeded by the American physicians, who already tried something of the kind. But my chief aim is the deferring of old age. Why? Because a person is more careless about his life than about anything else. If a gland no longer functions, one must either supplement it or replace it. I am the oldest person here, and I think no one can tell by looking at me that I am not far from sixty."—

It had become evening when they arrived again in the city.

"Do you wish to make another little tour?" asked Bob White.

"No, thank you, this evening we should like to keep on with the story of the founding of Santa Scientia."

"Then please go to your rooms, and we will eat in half an hour. The apparatus is ready. You will hear the continuation in the journal that I wrote."

With rather confused heads the scientists went to their rooms.

* * *

Elsa Dorn had likewise slept through the night and was in her room the following morning, at the time the gentlemen were beginning their sightseeing. She was somewhat depressed. After Mrs. Helling had bade her good night, she had been alone. She was vexed at Bob, who did not bother about her. In front of her room was likewise an exit into the roof garden, which seemed to cover the entire city, but the door was closed.

She would have liked to see something and to find out about the activity of this city. There was certainly life here, even if it was perfectly quiet about her. There was not a sound. No machines could be heard. No one was visible on the roof. She could imagine that she was alone. A plane passed, but not even the propeller made a sound.

Finally, at about eight o'clock, when she was already becoming uneasy, looking anxiously at the doorless walls and feeling herself a prisoner, there appeared on the glass plate, which was also in her room, an inscription: "The car, please!"

Now the wall opened, and the vehicle of the previous day stood before her.

In a few minutes she was in an office. She could not judge where it was located. Before her stood a tall slender man. She knew that this was Mr. Cook. He looked keenly at her for a long time. "Well! You are Miss Dorn?"

"Yes, I am."

"I know about you. After today you will take over the mail service, do you hear? Receiving letters, registering them, sending them, is your work. Mrs. Helling will show you everything. Beginning tomorrow you will work alone. This evening go to Prof. Weigand for a blood test and record. There are eight hours of work a day. Recreation is in the evening. The pay is one hundred dollars a month. Thanks!" Cook had finished and sat down at the desk, without giving Miss Dorn another glance.

She stood in confusion, not daring to ask questions and yet not knowing at all what she was to do now.

Then someone behind her said: "Please!"

She looked around. There was no one in sight, but the same word now stood in the glass plate of the vehicle. She entered, the door shut, and away she went. She felt rather ill at ease in all this.

Then she came to a large room. There was a desk at which a whole system of tubes ended. In the next room she saw a great number of typewriters busily at work, finishing lines, putting in new sheets of paper,

without anyone tending them. At the large desk sat Mrs. Helling.

The latter did not look up but simply nodded to her and said hurriedly, "Come here and see how it is done. In the working time I cannot look up, the machines will not permit me."

Elsa stepped closer and was convinced that she would never understand and learn what was done here. And was she to attend to all this herself the next day? Everything was quiet here. The machines operated perfectly noiselessly, only on the different glass plates stood words which lighted up and disappeared again.

An Intruder

THE men had again taken their seats in their common room, adjusted the lamp, and fastened under it the second of the booklets which Cook had given them. Today Mr. Van Rhyne did this as naturally as though he were adjusting a radio loud speaker.

At once there again appeared picture and inscription:

CONTINUATION OF THE FOUNDING OF SANTA SCIENTIA THE JOURNAL OF BOB WHITE

We have been on our island for two years, and everything is acquiring a different appearance. As the result of the great conference, in which the plans of the different gentlemen were discussed, we realized that the establishing of adequate light and power was supremely important.

Prof. Weigand was excused and allowed to go on with his work. The rest of us placed ourselves under the orders of Eberhard Römer and Ottomar Goldner. We made our way into the interior of the great volcano. Step by step our dynamite charges opened the shaft into the depths, and then we bored the tunnels.

It was dangerous work. Thousands of brave miners have met their death from chokedamp, but we were boring into a mountain in which the volcano was still alive, while vapors rose from cracks and splits. Now Weigand also had to help.

We caught the gases in bottles while we advanced, always wearing masks of course.

Weigand had to analyze the gases. According to his findings Grotfendt had to prepare pipes which would not be attacked by these gases, doing this in our hurriedly erected foundry.

Then came the day when we had to flee. The hot vapor shot toward us in a thick stream. It was well that we were provided for this by wearing clothes which protected us from the heat.

The pipe is laid. The other chinks in the mountain have been closed by a special cement. Now our pipe is like a horizontal chimney; quite regularly, almost like clockwork, the hot vapor of the volcano belches out to us. The air is completely spoiled. We have bored into this devil's kitchen and must now constantly wear our gas masks and breathe artificial oxygen.

Those were evil days, but now everything is arranged. The great distillation plant which Vetter and Goldner have established takes up the poisonous vapor. The different constituents, according to their chemical composition, sink into the retorts and provide us with chemicals. The purified steam, which still possesses high expansion properties, operates our dynamos. We have light! We have electric power!

Again two hundred Chinese coolies have come. They are here to crush the lava under Römer's direction and to mix it with the vast quantities of manure coming from the tortoises. They are old inhabitants of the islands, and we live generally on their meat.

Meanwhile Grotfendt is making the great hoisting apparatus intended for conducting the sea water over the entire island and keeping moist the virgin soil which we are preparing. At the shore great salt works are set up, which first take the saline content out of the water. We are beginning to make the first planting, because our workers want to eat.

We need machines, many machines, for we want to begin work at many places. We now have one hundred and fifty white foremen and mechanics; six of them, very intelligent people, are married and have

their wives with them. Besides we have three hundred Chinese coolies. They are very industrious and easily suited, and they are not concerned with what we are doing here. Their number varies, because we keep them only a short time and replace them by others, so that they may not learn our affairs.

Now we have built a treasure chamber, a vault blasted deep in the rocks. It lies where later on the central house of our city is to stand, and it is so placed that it does not interfere with the construction.

We have had an adventure which gave us cause for thought. We needed money. Cook and I climbed into the Inca grotto. When we were returning from it, we thought we heard footsteps nearby. Now there is of course an electric connection in the large grotto where Alesius died. I turned the switch, and when we looked about, we saw a negro, who had wedged himself into a crack in the rock and was staring at us. A negro! How could a negro get to Santa Scientia?

The fellow did not reply to our questions. He seemed to understand nothing of English, not to mention German. It perplexes us how he reached the island. We took him out with us, took our eyes off him a moment, and he had vanished. We have searched the entire island, but there was no trace of him.

Of course the island is not so large that one person could not be found by nearly four hundred others. We thought that perhaps he might have come over the ocean in a boat, but that would have been simply impossible, in view of the great storms prevailing at the time. He must have a cave somewhere, in which he lies. Perhaps he is the cause of the disappearance of some of our food lately. In that case we unjustly suspected our coolies. It is a pity, but we must keep guard. Still, what great danger could one single negro cause us, and many persons can certainly not be living here in caves!

The transfer of our treasure is completed. The vault looks like the fabled treasure chamber of Haroun Al Raschid. The gold ingots are piled up high. In special boxes are the jewels. There stand strange jugs

and pots, fantastic weapons, and costly necklaces, just as the Inca art made them centuries ago. A splendid museum! We shall use only the gold and the loose stones.

Mr. Möller was here and appraised everything, while I made the list. It is a mighty treasure. It is incredible, what quantities of gold and other precious metals, what innumerable jewels, are piled up here!

The Inca grotto, in which the stone Atahualpa now sits on his throne without his treasure, we have closed up by a plate of iron. Before our grotto are mighty vault-doors imbedded in concrete. We must also be on guard against the Chinese.

CHAPTER X.

The Disaster!

THE negro was here again and saw us carrying the gold ingots. Suddenly we saw him standing not far beneath us, and as we gazed he disappeared again just as quickly, as though he had sunk into the ground. I hear that the Chinese are telling stories of horrors on the Island. It is still a mystery to us where the fellow lives.

Now we are going to construct the city. The plan is ready, and we only need to decide the type of construction. We have only a few serviceable stones here, and we shall not use them at all. We shall have iron shipped to us in great quantities; Isabella is to be made of iron and glass. Römer has discovered that we have great amounts of silicic earth here, from which excellent glass can be made.

It is well that we have among the mechanics young Helling, who worked several years with Schott in Jena and has an exact knowledge of the manufacture of the new glass, which allows ultra-violet rays to pass through. It is also well that we have all our chemicals furnished by our volcano. Now we have ordered a million machines. Daily the ships moor at the reef and unload with curious sailors crowding the decks. Then on calm days we have to bring our property to our island in small motorboats.

Möller has spread the rumor that some-

where in the ocean he wants to build an artificial island as an intermediate port for airships. People laugh at that and think him crazy, but they pay no heed to what goes on. Nobody notices whether the big packages contain concrete blocks or machine parts.

We are celebrating a festival of victory. Now we can work, for everything we need has been brought to us. We have not only earth but everything else for the manufacture of glass.

Will our new city be beautiful also? Though we live in a practical age, we realize that all that is really practical can also be beautiful, simply because it fulfills its purpose. The plan which Otto Schultz has designed and drawn in many colors is certainly beautiful in its way. He did not work it all out himself; Grete Helling, the young wife of one of the engineers, helped with it. What is better work for a woman than the display of good taste for a practical cause?

Our prosaic city will resemble one from a fairy tale. We shall color the glass walls, choosing green, red, and blue glass and all sorts of pastel shades. There is a purpose in that also. Elizabeth Müller, also a young wife of an engineer, now assistant to Prof. Weigand, has made a deep study of psychology and the influence of colors on the moods of people. We shall provide the houses in which the work rooms are to be placed with red glass. This stimulates the nerves. Living rooms will be light yellow or milky white; rest rooms will be blue for blue lessens the nervy tension. Green, quiet green, is suited for mercantile offices.

Our city is also to be healthful. It is to have more parks and green expanses than any other city and at the same time save space. Therefore all houses are to be of the same height. All roofs are covered with thick loam and gardens and parks are put there. The streets are all bridged over, so that the whole city surface at the height of the tenth story forms a single great garden, in which we place artificial brooks, ponds, and fountains.

We shall build a few important buildings higher—such as hospitals, homes for the

aged, schools, and hotels. Then these, although they will form the eleventh and twelfth stories, will look as though they lay on level ground in the park. In the center of each roof will rise a slender four-cornered glass tower, which will pour over the park a bright light softened by the colors of the glass.

In the central point, before the government building, we shall have a great open square for public meetings, of course at the height of the pedestrian streets. It will be cooled naturally by beautiful waterfalls. The water from the roof fountains and the artificial brooks which flow through the roof park will rush in cascades over terraces of glass. We dwell upon the magical effect of these waterfalls, which we can illuminate as we like. The water is finally collected and flows again to the stream which feeds our electrical machines.

THIS is to be the appearance of Isabella, when it is finished. Now our workmen are staking out the surfaces, while the great glass factories are being erected. In the iron foundry on the coast preparations are being made to produce the iron girders, the beams of aluminum alloy, and the other necessary construction materials.

It is splendid to be able to create things in their entirety and work with clear healthy minds and strength.

We have gone through the worst days possible for us. We were as though paralyzed and thought it was all over for us. During Saturday evening the horrible thing happened, something so terrible that we could not adjust ourselves for days. It was an earthquake, really not a bad one but only a subterranean shock, which terrified us for a moment. Such little shocks happen fairly often in our neighborhood and have never done any serious harm.

This time also everything was all over in a few minutes, but these minutes ruined us. Our electrical power plant stopped. Suddenly the light went out and the power failed. At first we thought it a temporary disturbance. The earthquake might have deluged the machinery with some stones. But when we investigated, we found the

machines were all in order. But the hot breath of the volcano, which had puffed through the pipes in regular beats like a giant heart, was gone. The volcano was silent, the steam power had ceased. We were in dumb horror. The electric light and electric power were gone. Our fields were bound to dry up, for the suction machines which conducted the sea water to them no longer worked. Our work was at a standstill, even our motor boats could not have their batteries charged.

We stepped up on the hill to look out. Had the volcano disappeared? Impossible! The power which lived underground in the mountain and the steam which used to force its way out had had their course changed a little. The steam would have to come out somewhere.

Although we were acquainted only with those which Alesius had discovered before us, we knew that the whole island was a network of such old volcanic passages. Were there not perhaps other such caverns beneath us? At any moment the ground beneath our feet might begin to rock. An abyss might open up and swallow the beginnings of Santa Isabella in a glowing sea of lava.

Mr. Cook cried out: "There!"

We looked where he pointed. On the sea, not far from us, a fire was blazing up.

"A burning ship!" someone shouted.

How did a ship get so near our shore? How had it got on fire? How could we helpless ones give any aid?

Römer waved both his arms. He had run to the sheet iron shack and fetched the telescope. "That is no ship! That is a new volcano!"

He had hardly said this, when a gigantic column of fire rose apparently from the waves, a dark red column of fire, in which white hot points swirled up as in a pyrotechnic display. In the next moment this column was already spreading out like a palm tree, and everywhere the glowing masses were falling into the foaming sea. There must have been great compressed glowing bodies, nevertheless filled with gas, for as soon as they struck the water they exploded. They flew around as little white hot missiles,

like fragments of grenades, and fell to earth even close to us.

We fled. Shrieking and burning fireworks on their own account in their superstitious terror, to lessen the anger of their gods, the Chinese coolies ran up the slope which led to the great crater, which we had called Mt. Atahualpa and in whose peak the Inca grave is located. We followed, then—

Midnight. We stand high up on the mountain. Now we at least know that there is no danger threatening here; that no eruption is to be feared; that the infernal subterranean forces have chosen another path, and Santa Isabella is saved from destruction.

A magnificent and fearful spectacle, the formation of a volcano! We needed no telescope; we knew that the volcano had come into being on the little reef of Santa Roca, not far from our island. Alas for the poor tortoises and iguanas that lived there! The crater had risen up. Increasing from second to second, there rose from its midst a tall white hot column, a tower. It rose, was played around by yellow, green, and blue flames, and burst at the summit and plunged down. Floods of lava poured over the edge of the crater with a ruddy glow and flowed into the boiling sea.

How splendid this sea was! We could see plainly its play of colors in the light of the devil's torch. Yellowish foam dashed up high, as though the water were screaming from painful burns, but then came a deep azure stretch of calm waves, and only further on were the high billows again produced by the earthquake in the absence of any wind.

Reconstruction

THE whole night long we stood in silent consternation. Slowly the first vehemence of the volcano seemed to be lessening. The column vanished, plunging into the ocean with millions of tiny sparks, with a volley of explosions.

When morning finally came, when the first rays of early red blended with the colors of the fire-spitting mountain to make an incredibly splendid symphony of colors,

the reef was entirely changed. A cone had risen up, over whose edge the lava was now slowly flowing down. By day the pillar of fire was changed into a palm tree of smoke, which now stood seriously and calmly above the newly made volcano.

Römer turned to us. It had actually been hours since we had exchanged any words. "The danger is over for us."

"But our electric power is gone."

Vetter nodded. "It was certainly an error to build on things which are so transitory and whose duration we cannot judge. We will at once set to work with all our might to complete the second power plant, which is to use the waves of the sea. Ebb and flow will always remain."

We climbed down, and the Chinese collected about us. The great barracks in which they lived lay in ruins. They had been destroyed during the night by the glowing projectiles. We must change our plan; we must build the city of Isabella on the other side of the island, where it cannot be struck. We should be cowardly and unworthy of our lofty task, if we let ourselves be intimidated now. . . .

We have made a discovery: a spring has broken through the rocks, a fresh mountain spring. We do not know how long it will flow or whether it is merely the outflow of an inner chamber full of water or something of the sort, but we at least have water, and we are digging cisterns and saving it.

Today is very hot. Since our water raiser has failed, which formerly provided coolness, and since the tropical sun is reënforced by the fiery glow of the volcano, it is hardly bearable.

While the Chinese are going to work under the guidance of the engineers to put together hastily the turbines of the new power plant, which is to use the ebb and flow; and while Mr. Cook is going over to Cabo Martino, the reef enclosing our harbor, to see whether anything has been destroyed of the machines and supplies there, I am making a tour of inspection with Prof. Weigand.

It is natural that our first stop is the old Inca cave in which Alesius died. The earthquake, which did not seem very ser-

ious to us, must after all have been quite severe. The shaft which the engineers had driven into the cave is filled up. In return however, the little crater bay, where we formerly had to dive, has become an enclosed lake, for falling rocks have raised the height of the bar and the sea can no longer get in. The whole lake is covered with the bodies of animals, strange bizarre forms, fish from the depths of the sea, which were hurled up from the bottom of the cave lake. There is now a natural entrance in the rock; we no longer need to dive.

There is a boat on the shore. We push it into the water, take our lanterns, which we must use sparingly, because we have no way of charging their batteries until the new power plant is completed, and cautiously go to the new opening.

The cave is completely changed. We have probably always been in great danger when we climbed up in the shafts, for the rock was more brittle than we assumed. A great deal must have fallen down, for the lake in which the deep water fish made their lanterns shine is filled up. This explains the fact that the flood wave, which arose because of the shock, cast their bodies out.

The shafts have disappeared. A giant block of stone has covered the entrance to the Inca grotto. It is well that we stowed away the treasures; now the entrance to where they used to be is perhaps blocked forever.

But the grotto is much, much bigger. It is a mighty subterranean lake. Now that soft sunbeams are entering, it reminds one of the much larger grotto of Capri.

It will be the problem of our mining engineer Römer, who is also a capable geologist, to determine whether new falls of rock are to be feared. If not, this lake can afford us great pleasure, and I have my own plans for it.

WE leave the grotto. Close before the entrance sits the giant iguana. I fancy that it is the same one which one greeted Alesius and which he took for a good omen. While Weigand with trembling hands is collecting the cast-up wonder-

ful fish of the lake for his investigations, I return to the others. . . .

I again pass over a half year. We have already had two anniversaries of the day which brought us all to the island. We have lost months through the earthquake, and we had to use all our power to make the new electric plant. It is completed. Now it will never fail, especially since the new volcano has become a regular but slowly operating valve for the subterranean forces. Also our plantings, which were drying up in those days, have long since been restored. Now we are building our city.

The buildings are beginning to rise, and already we can lay the concrete slabs on our foundations of stone blocks and our iron floor frameworks mounted on them.

We have done well to get the young engineer Helling. He is building the city under the guidance of Schültz. It is ridiculous, one man building the city! To be sure, that means that a head architect controls a number of hundred workmen, but here it is to be taken literally; Helling and twenty helpers are building the city, together with their iron assistants which Grotfendt has invented.

The iron girders lie piled up in the proper order. An iron arm of a crane sinks down, seizes in its claws one of the girders, weighing thousands of pounds, swings it aloft, and places it at the right spot. At once, apparently automatically, a riveting machine comes to it, up at a dizzy height, and rivets the girder fast, while at the same time the crane is bringing up a new girder. It is an incredible maze of wires, movable cranes, devices constantly rising higher by a screw motion, and electric cables. Over the whole thing, as though on radio towers, there hangs on masts the mighty searchlights which illuminate everything.

The entire shore of the island is a gigantic construction site. Far down under the earth runs the tunnels, while trucks running on rails automatically convey out the debris and throw it into the sea. Of course even this is done according to accurately drawn plans, for out of this debris we are making a breakwater, which is later to enclose the real harbor which we must some day have.

Often when I stand on the hill at night, it seems to me as though all this were not reality but the fantasy of a night of fever. Yet all goes on according to definite rules and laws and is only the work of ingenious men.

CHAPTER XI.

The Crisis

BESIDES Helling the twenty newly acquired young Germans are at work. Under their guidance, under the finger pressure with which they operate keys almost like those of a typewriter, the buildings are rising up. The iron arms are building the iron city themselves, and to them it is all one whether or not the sun's rays are blazing down upon their work. They know no hunger or thirst or weariness.

When the whistles blow at evening, Otto Müller and twenty other mechanics relieve Helling. Gigantic searchlights blaze forth, and the work continues during the night. Even these searchlights would not be needed, for the accurately adjusted machines would work in the darkest night; only the human eyes which observe their work require light.

At the same time other machines are active. The vitreous earths are continually fetched in great amounts from the wastes and are blended together. They are then cast in great plates, colored, and polished.

All the panes of glass in Isabella are of the same size. Cranes hoist the panes into the ready rectangles of steel and set them up; the machines then putty them. In obedience to the commands of the electric keyboard the double glass walls arise with the cooling spaces between.

Under the hands of all these iron arms the construction is growing visibly. Perfectly regular the house blocks rise. The glass walls are added to rooms, the ceilings of concrete slabs stretch across, and finally bridges span the future streets. At once other cranes carry up earth, which has been chemically changed from unfertile soil to rich loam, and at last sowing machines roll across the new garden land.

Gravel walks come into being under the guidance of the two engineers' wives, who are busy as gardeners. From numerous pipes streams of water are beginning to fill basins and cascades with joyous life, while diligent Chinese hands are planting shrubbery and palms.

Everything is happening exactly according to the prearranged plans and in the greatest quiet, for each citizen works with only the carefully devised machines assigned to him, and these are silent workmen.

Thus the city grows, for which everything is on hand except the inhabitants.

The shaft under the new central building has long been completed. From it a tunnel has been advanced to the sea coast. Here, a few hundred meters below the surface of the water is an artificial cave, in which Mr. Grotfendt, the rapid transit expert, has set up his machines. They are connected by a further shaft with the melting furnaces up on the shore. From here he has extended his floating tube out into the sea for the reception of his railway. . . .

It is splendid in Santa Scientia. This creative life everywhere! And while the houses are being finished here, yonder the crops are beginning to thrive. And out on the sea boats with divers are struggling to connect up the parts of the tube forced out of the pressing machine with their hawsers. It is wonderful to look into the shining eyes of all these people, who day by day will see their bold thoughts become reality. . . .

Our city is completed, and our plans at a turning point. We must have people; our previous system no longer suffices. It is useless to have only ten or twenty persons come to us annually.

Among the first immigrants are people from all lands. That in itself can do no harm. America has proved that a good new race can result from a veritable mixing of all races, especially if they come with intelligent heads and sound bodies. But we must be careful for the police authorities are very keen to spy on us. The cards which our pilots used to send in Frisco draw people no longer. And if we should venture to seek women and children in the

same fashion and make them disappear, we should be considered the worst kind of abductors.

SOMETHING must happen, something great, which will get us past this crisis. But what? For the first time there is failure of our thoughts, which are only trained for technique and machines. It is a great pity, but our splendid city, which is a century ahead of the whole world, is wasted.

Is this good news? Möller has written from Frisco and sent us some German papers. A German expedition is on the way to our part of the world with a number of noted German scholars. There is a great danger for us in this, because the report states that they are to study the air currents on the west coast of South America. German scholars? They must not be lost, they must not discover our secret, but they must also not return home in failure.

We have discussed the question. These German scholars must become acquainted with our work, and we must, as it were, subject ourselves to their judgment. Can we invite them openly? No, no other country must suspect anything as yet. They must become our guests without wishing and knowing it. . . .

We have received another report. A German criminologist named Schlüter is en route to discover what has become of the Germans who vanished previously. . . .

An airship just brings us the news that the expedition has sailed from Frisco on the private yacht *Nightingale*, which belongs to a man from Chile. This Dr. Schlüter has also gone on board. Now is our opportunity, now we must see whether we can bring them to us. . . .

A fearful hurricane is raging on the sea. The yacht has fared ill. We kept observing it from on high by planes, at heights where the storm no longer rages.

Our planes have succeeded in getting somewhat lower. We have a report that Will Becker, one of our best mechanics, was fortunate enough to be hired in Frisco as a machinist on the *Nightingale*. The yacht uses electric power. We are sending

out a great Zeppelin which has all requisite apparatus on board for our plan.

The Zeppelin is floating in the calm air above the ocean. It has succeeded in using its powerful storage batteries to make contact with the *Nightingale*. The yacht no longer obeys the will of its officers and is subject to the distant control of our Zeppelin, which must bring it to the band of radiation surrounding Cabo Martino.

A giant wave has hurled the almost wrecked yacht through our hydrogen barrier. Now it is in perfectly calm water and so close to land that it obeys our long distance control machine in the rocks of Cabo Martino.

The Zeppelin returns. Bob White sets out for Cabo Martino to receive our involuntary guests. We are afraid that they will be angry at the violence we have shown them. We hope we can soon conciliate them.

* * *

The journal is ended. The gentlemen arise.

"This is indeed an explanation, but one that only a giant brain can actually comprehend."

"At any rate, I am thankful to these giants."

"To think that you should say such a thing, colleague Ortler!"

"This is, if we may generalize, simply the technical and scientific future of the world."

The door opened, and Bob White stood before them. "Have you finished reading?"

"We would not believe what we have heard, if we had not seen the city with our own eyes."

Van Rhyn was deep in thought. "Who built the apparatus which allows us to see at the same time as it reads aloud?"

"Mr. Vetter, of course."

"He has taken away from me my life's work. Does all that depend on selenium cells?"

"No! That was not possible. You see that the books are in very thick print and that the letters almost resemble those used for the blind. A special construction of the lamps causes the writing to cast shadows

on a sensitive plate inside the apparatus. Remarkably delicate cells of a substance still more sensitive than selenium, which your colleague Vetter will explain to you, are so arranged that electric currents are released by those shadows which interrupt the light on the surface.

"These again produce radiations which make it possible by their oscillations to convert the writing into sounds and make it heard in the loudspeaker. All in all, this is simply a further development of the radio. It is a very beneficial invention, especially for our hospitals. There indeed we have the same apparatus with head-phones, and it is possible for each patient to have any book he wants read to him in this way, without his being tied down to the fixed program of a radio station and without one disturbing another."

Van Rhyn nodded vigorously. "Yes, if one only has time, money, and an undisturbed place to meditate!"

"That is just our aim. We now ask you gentlemen to think over what you have seen. Tomorrow we shall once more take you through all that we have made. Then Mr. Cook requests your judgment and your opinion."

Bob White, the only one aside from Weigand who had spoken with them, while the other creators of this marvel remained modestly in the background, bowed and left the room. The scientists remained for a long time earnestly exchanging opinions.

Conspiracy

DISORDER was again prevailing in the republic of Puitu. The aged president, Ronaldo Ferreira, who wanted to imitate the great Porfirio Diaz of Mexico, had conducted an iron rule. Conditions had been better under his control, but as is often the case, the debts of the little state threatened to become enormous. The attempts which the President had made to get American money brought with them the danger of giving the control of the country to the United States, as had already happened in most of the smaller South American countries.

A strong opposition party had developed, which wanted to unseat Ferreira. With great gesturing it cried its watchword: "Puitu for the people of Puitu and not for the foreigners."

They were mostly fanatical young men with revolutionary inclinations, some of them persons who, being deep in debt, wished a revolution less for reasons of patriotism than for profit. Joao Ferreira, the son of the president, a young man of unbridled ambition and adventurous temperament, was the soul of malcontents.

In a little country house outside the seaport of the state, the conspirators assembled. Among their leaders was especially Don Christobal, a gifted young man and the chief secretary of the president. The little back room, in which the pretended gambling club used to gather, was closely covered with curtains, and it was night.

Don Joao stepped toward his friends. "An important message!"

Christobal was impatient. "Time is pressing. If we do not make a proclamation, unseat the president, and act quickly, all is lost. In two weeks the gentlemen from Washington will be here. If Ferreira is still president then, we will fare like Nicaragua and Panama and be only vassals of the United States."

Another interjected, "And suppose we do make a proclamation? What is the use? Have we money enough? Can we work magic? What is the use?"

Don Joao stepped to the center. "What if I have the money?"

"Millions?"

"Countless millions."

The others laughed. "Where are they?"

"My own father has given them to an American. They are on the Iguana Islands."

"The fabulous Inca gold? Nonsense, my dear fellow!"

"No nonsense."

"Have you seen it?"

"No, but I have someone here who has seen it, who was present when those slave dealers, those new filibusters, carried it off in great heaps."

"The Americans?"

"They and their German cronies. What are they doing there? What is the mystery? What is the meaning of their allowing no one on their island? What are these puzzles? I know more than anyone. They are dangerous people. God knows what goes on there. The League of Nations would have to interfere, but—" he laughed. "I think we will help ourselves."

"They own the island. You know that when there were such rumors once the government made an investigation. Now the island has been sold to them with all it contains."

"Because my father is an old doddering man."

Christobal shook his head. "First we want to learn what is going on there on the island."

Joao nodded. "I will fetch the man who will tell you."

He went out and immediately returned with a negro, who was dressed in a fine modern suit and spoke fluent Spanish. "Now answer again all questions! Who are you?"

"My name is Sam, and I was cook on the airship in which Prof. Alesius was once wrecked on Iguana Island. Then I voluntarily remained on the island when the professor was saved. My wife stayed with me."

"Why did you remain behind?"

"I wanted to get the Inca treasure which the professor had discovered."

"Did you see it?"

"I WAS in the cave of the mummy. I saw the gold bars and the quantities of jewels which were heaped around the throne. Then in the years of wretchedness I tried vainly to get into the cave. The earthquake filled it in. My wife died, and I remained alone. I could not leave the place of the treasure, and I hoped that a ship would come. I would have told the captain and made a deal with him. But nothing came. I lived on turtle meat and iguanas. Day after day I looked for the entrance to the grotto, but I did not find it."

"The treasure does not exist?"

"Then—five years ago—a yacht came.

I stood on the shore hidden behind bushes and saw them land. They were Prof Alecius, a tottery old man, and two Americans. I saw them dive into the crater lake by the shore. They disappeared for hours, and then I saw them come back again, the two of them, carrying the dead professor in their arms.

"They went away. I was glad. But I was a fool and thought they had found nothing. Then the Americans came back with six other people. They blasted a hole in the mountain. Again they were gone a long time, and then they came back with the Inca jewels in bags and in their arms. They founded a settlement, remained on the island, and I saw with my own eyes how they carried down loads of gold and jewels and stowed them in a treasure vault.

"They are rich, they have millions. They are dangerous men who steal people and bring them to the island. Who knows what they have in mind? But I listened to their talk. They were stupid and did not know that I knew every bypath on the island and could disappear when I wanted to. I took what I needed, and one night when there was a storm, I stole a motorboat and fled. They will think the storm destroyed it. I sailed by compass. The sea was quite calm. I steered east, because I knew that the coast could not be far. I met another ship, a steamer. They thought I had been shipwrecked and took me on board. So here I am."

CHAPTER XII.

The Conspiracy Ripens

"**H**OW did you come to Don Joao?" the negro was asked.

"Chance brought me to this house."

"What do you want now?"

The negro's eyes rolled in wild greed. "I want the treasure on the Incas, which I have watched over almost ten years on that lonely island. I want it or at least a part of it. I will not give it all up to anyone else."

The man created throughout a sincere and

sane impression, certainly not that of a madman or a liar.

"Please wait outside while we take counsel."

The negro was led out, and then Joao asked, "What now?"

A Scotchman, MacGonnor, a soldier of fortune who had recently come to Puitu, shrugged his shoulders. "An immediate ultimatum to the government. The sale is invalid. This man swears that Cook, when he talked Puitu out of the island, knew of its wealth. It was deceit, and—"

Joao interrupted him. "Why? What does it benefit us, if my father now repairs his error? Listen, gentlemen, listen friends; how does it help us?"

"What do you mean by that?"

"We ourselves must act. Is Puitu happy, as long as my father is still president?"

"It lies under the yoke of the tyrant."

"We shall make it happy!"

Loud applause. "Ourselves at least."

"Well then! For ourselves the millions, the power, and Puitu!"

"But how?"

"How many white people are there?"

"There may be fifty, but only six besides Cook and his secretary White are leaders. Sam knows exactly."

"And then?"

"Of these six only the four engineers are to be feared. They know nothing of us, and for years they have peacefully consumed their booty. They are not even accustomed to post guards. We are twenty brave men, determined for anything. We will sneak out to the island. We already have enough money to hire a seaworthy yacht."

"Do you think they do not guard the island? Thus far every ship that even approached the island has been turned away by their notorious remote control system."

"Every ship that they noticed. We shall not go to the island but anchor at the coast of San Salvador, which is not far from Santa Scientia and still belongs to Puitu. Let them think, if their electrical systems detect us, that we want to catch fish! There we shall wait until Sam tells us the time is ripe, and then we shall glide in the night

over the quiet sea, then land and remain concealed by day, and attack the American and his secretary. We shall become masters of the island.

"What do we care about the others, when we have the treasure! Let them be happy in Isabella! Sam knows what he is about. In a few hours of the night it can all be over. If they wake up, if they defend themselves—still the Chinese coolies are not soldiers, and all the fifty whites are not even three to one against us."

The young men surrounded Joao enthusiastically. The plan was discussed, and Sam was recalled. "Do you want to guide us?" Purposely they addressed the negro as "Senor".

"What do I get?"

"How large is the treasure?"

"Many hundred millions."

"You get a million, when it is in our hands."

The plan was briefly presented to him, and he grinned. "I guide. It is not at all hard. I think they have no weapons there but shotguns, and the Chinese fear me as an evil spirit which has often terrified them, when I went 'requisitioning', as they say in war. I have been making war on them for five years."

"Stand up everyone! Swear, gentlemen!" Joao became solemn and serious. "Swear, gentlemen, to tell no one of our plan and to keep the secret!"

"We swear."

It was late at night when the young men went home, purposely singing loudly and pretending drunkenness. Sam had to stay with Don Joao, so that he might reveal nothing, even by chance.

The next morning notable news could be read in the Guayaquil newspapers: The yacht *Nightingale*, in a very miserable condition, had been towed into the harbor by a steamer. It could only be assumed that the captain, his officers, and the four men of the crew, who had been found on board completely exhausted, had lost their reason. The things that they told were entirely too incredible.

The matter of the hurricane was certainly true, but nobody believed the yarn about

a lodestone mountain which had attracted them. Besides that there was the landing and disappearance of the six scientists. Afterward the yacht was supposed to have wandered about for days and due to the breaking of the rudder, to have lost its power of being steered. Finally it had been sighted by the steamer, which had taken it in tow.

THE port commander shrugged his shoulders. "They have lost their reason—or else they have marooned the expedition somewhere and basely deserted it."

A telegram was sent to the owner of the yacht at Santiago de Chile. Van Breeken and his men were taken to the hospital, but they were guarded like prisoners.

Only Don Joao and Christobal, who were sauntering on the shore together, were of another opinion. "The captain is right. The six Germans have disappeared into the mantrap of the American, like the others."

"Then we will do a good deed in saving them."

"At worst there are six old professors more, if they make common cause with the others."

"Now be quiet, we are on the street! Come to my house, senor! My friends are all assembled."

They walked silently together until they had reached the lonely building, in which the eighteen other conspirators were sitting around a roulette wheel and having the balls rolled. Joao, who felt his position as leader and future president of Puitu, became formal. "You are gaming, gentlemen?"

MacGonnor laughed. "For bills on the future millions of the Iguana Islands," he explained.

"They belong to the state of Puitu," was the answer.

There was a general laugh.

"We are patriots and care for our fatherland. We are sacrificing those eight men, because our duty demands it."

"Hello, old man! You shall play president, but the money will be divided."

"Let us say half and half, half for us. That is, I as father of the idea get three

shares, each of you one; the other half belongs to Puitu."

"The whole belongs to us!"

"We are risking our lives!"

"We need no guardian!"

Christobal stood in their midst. "Gentlemen, we are dividing the skin of a lion which we have not yet killed."

"Christobal is right! First the money, then the division!"

"When?"

Even Joao was again calm. "First one of us must go to Santa Scientia, as the men call their robber city. We have discussed everything. Don Christobal shall be the one. As secretary of my father he can gain entry as a sort of ambassador from Puitu."

"Not Christobal!"

"Why not?"

"Because he makes common cause with you. Drawing lots shall decide!"

Christobal was indignant. "I force myself on no one."

"Then draw!"

They drew lots, and it fell to the Scotchman MacGonnor.

"I am going."

"But how?"

"That is my lookout. I start out today. First I am going to Frisco. There I have friends and can see what to do next."

"Do as you please! If we do not hear from you in a week, we shall draw again. Otherwise we simply hold our tongues."

Joao again became formal. "Gentlemen, we will now separate and not come together again until I give the signal agreed on. The government must think that we are perfectly quiet. The opposition must be silent. You all know: in the next two weeks, before the United States envoy arrives, it must all be done."

The conspirators parted. The same day the Scotchman MacGonnor took a plane for Frisco.

The Land of Joy

THE six scientists formerly of the *Nightingale*, who had by now completely forgotten their reason for coming to this part

of the world, were sitting at breakfast, and Bob White was again with them.

"Gentlemen, you have seen that we have made a sort of watering place about the great clinic of Dr. Weigand. We have named it 'Alesia', after our great professor. Now we propose to you that you go there for twenty-four hours, so that you may think over everything in peace. First we will make another tour through the factories."

"Agreed."

They went, of course, by means of the travelling chairs, once more to the lower rooms of the building. Naturally the four lowest stories were without natural daylight. Yet they were well lighted. The light did not come from any sort of lamps but radiated indirectly from the grooves under the arched ceiling. There was a perfect impression of natural daylight prevailing here.

"That is just the trouble about an illumination which comes from a definite glowing body: the eye is needlessly strained by looking into a source of light. You see that here too, according to the kind of work to be done, we have variously colored panes before the sources of light. These colors are to act on the nerves of the workers. Likewise there are the measuring apparatus, giving at every moment the exact composition of the air. Those devices are of course not here but in the air regulating station.

"A man sits there—later it may be a girl—and has nothing to do but observe the different air measurers and by simple movements of levers regulate the access of ozone or the ventilators which remove the bad air. Here we avoid the mistakes made elsewhere. If you go into some ballroom, you will soon suffer from great heat, tobacco smoke, and consequent cramping of breathing. Our system on the other hand assures that the air is everywhere and always kept to a composition which is pleasant and healthful, whether thousands of persons are in the room or whether it is empty. You cannot imagine how bad air wears out the lungs!"

"Then you use huge quantities of artificial oxygen?"

"Not at all; merely a system of pipes which take away the bad air, pass it through

Through the Purple Cloud

By Jack Williamson

(Illustration by Paul)



An explosive outrush of purple vapor hurled them backward.
"Now!" George whispered.

A RATHER pretty girl was seated across from George Cleland, on the other side of the aisle. They were in the rear compartment of the gigantic, four-motored Fokker passenger plane, just taking off from the Alhambra field at Los Angeles, for the three-hour flight to San Francisco — or rather, to meet as weird and astounding an adventure as ever befell human beings. George was returning to his office in San Francisco, and to his engineering work after a summer's vacation.

He watched the girl with interest as the steward handed her the little package of absorbent cotton with which to stop her ears against the oppressive roar of the motors. Clearly it was her first long flight. Her smooth cheeks were flushed with excitement; her shining gray eyes looked up quickly to see what the other passengers were doing with the cotton.

Her eyes met George's. She smiled at him a little, accepting him as a companion in the adventure of the flight. He grinned instructing her to twist the soft cotton into cylinders, and fit them into her ears. She smiled her thanks.

Already the great plane had rolled across the field with ever-increasing speed, powerful motors thundering, had left the ground to rise easily through the low, gray fog, into the brilliant sunlight of the August morning.

George liked the girl. She was pretty. Soft brown hair, glistening with ruddy lights, tastefully arranged. Bright face

flushed with excitement. Gray eyes shining. She wore a dark green traveling suit, neat and trim. The body beneath it seemed to be neat and trim, too; athletic and well-developed. She looked like a co-ed. He remembered that the University at Berkeley would open in a few days, and supposed that she was flying up to attend it.

Two other men were sitting in that rear compartment with them—the great plane did not have a full load and four of the seats were empty. Facing George was a slender, meager, little, man, whose black suit was polished with wear. He wore enormously thick-lensed glasses, and his face was narrow, pinched, bird-like, so that he gave George's imaginative mind the suggestion of a grotesque, goggle-eyed monster.

Presently he leaned forward, however, with the map of the route that the steward had handed him, introduced himself as Howard Cann, said that he owned a dry goods store in Oakland, and asked George to help him locate the observatory which, according to the map, should be in sight on Mt. Wilson. His voice sounded thin and bird-like,

above the unceasing roar of the motors.

George pointed out the silver domes and towers shimmering on the crest of the mountain, in the bright August sunlight. Cann nodded his thanks, and bent over the map again.

The other man was sunk sullenly into a seat facing the girl. George did not like

THE world of our senses, we are coming to learn, is not actually the world that exists in reality. What the real world may be, we have no means of knowing. Even our laws of nature are the product of our sensual observations, and may be fraught with as many errors as our other conceptions of the universe.

Einstein has introduced into our scientific thinking an almost limitless vista of new worlds. Since everything is relative and nothing absolutely real, conceptions of other dimensions existing side by side with our own take on more of a semblance of probability. Those other dimensions may not be expected to be like our own world, they may be strange beyond all imagination.

Mr. Williamson is admirably fitted to deal with such bizarre worlds. His fluent, picturesque style conjures up instant images of strange places, and in the present story he tells us of a world that the immortal Edgar Allan Poe might have created.

him. His clothes fitted his bull-like form loosely, grotesquely. His heavy-jowled face was black with a short stubble of beard. From beneath a disreputable cape, pulled low over his forehead, he was staring at the girl, rather to her discomfort.

His ferret eyes were black, shifty. George noticed that he swept the compartment watchfully with them, at intervals, always resuming his annoying gaze at the girl. I wouldn't like to meet him on a dark night, thought George.

THEY had been up a little less than an hour when the astounding catastrophe took place.

The little, spectacled man who said his name was Cann had persisted in his high-voiced questions. George had pointed out to him the San Fernando and Santa Clara valleys, and Tejon Pass, and Lebec. They were just coming across the last gray mountain range, over the southern tip of the great San Joaquin Valley.

The air had been smooth, though the ship seemed to rise and fall with a slow, almost regular motion. The girl had seemed to be enjoying her flight immensely, peering out of the windows with a lively interest. Once or twice, to George's pleasure, she had leaned over to watch when he was pointing out something of interest on Cann's map.

Once she had asked some little question. Her voice, above the mighty, overwhelming roar of the four great motors, had seemed clear and pleasant. George began to regret that the flight and their companionship must end in a few short hours when the great plane glided down to the Alameda airport, across the bay from San Francisco.

But the plane, and most of her passengers, never reached Alameda.

George happened to be peering out when it occurred, trying to locate for Cann the

town of Maricopa, which lay a little to the left, and ahead of the plane.

The air before the ship was suddenly filled with a blinding purple light, as though a great shell had burst, releasing a vast volume of incandescent violet vapor. A moment before, the sky had been clear. The purple cloud appeared suddenly, as if from thin air.

Its diameter must have been many miles extending from the ground into the cloudless sky above them. The great plane was plunging almost at the center of it, and far too close for the pilot to turn aside.

George thinks, however, that the ship was suddenly tilted up, at the last instant, as if the pilot had attempted to zoom above the purple cloud. But it was only a moment after the cloud appeared that they struck it; the tragedy was occasioned by chance, not by any want of skill — and no display of skill could have averted it.

But as they pierced through it, George saw the purple cloud contract swiftly. It became a great, smooth-surfaced sphere of violet-red radiance. Then, somehow, it seemed to flatten, become

thin, until it was only a disk of red-blue light.

It became a circle of purple flame, a hundred yards and more in diameter — we can judge its size only from George Cleland's guess based on that quick glimpse of the amazing thing. A disk of amethystine fire, hanging in the air, with the great plane plunging away from its center.

A long, dreadful instant went by, after George knew that they had crashed through it. He had time to wonder what it was, to wonder if it could be only some trouble with his eyes, then he realized that others could see it for Cann shrank back from the window and clutched at his arm.

Without a sound or a vibration, they had



JACK WILLIAMSON

passed through the purple disk, into a flood of crimson light!

George was dazed.

One instant, the blue sky was above and the green-blue fields beneath. The next, they were flying at some crazy angle beneath a sky that was red, plunging toward the foot of a precipitous cliff of jet-black rock.

The cloud of purple had been like a gate to another world. They had flashed through it, into another plane of existence that seemed to lie co-existent with ours, yet more distant than the Andromeda nebula. To the science of a few decades ago, such a thing would have been incredible. But Einstein's relativity, with its four-dimensional continuum, with its destruction of the old conception of space as an absolute dimension brings it much nearer to understandable phenomena. And it is confidently trusted that the implications of the incident narrated here will result in a farther modification of the changing theories of relativity.

The plane was hurtling toward the base of a rugged, towering wall of grim black rock, which had suddenly appeared beyond the purple disk. A crash was inevitable. The pilot had time only to bank the ship, causing it to strike the ebon cliff obliquely instead of head on.

George was stunned by the crash.

His last recollection was of their plunging flight toward the sheer, soaring wall of black rock, of the attempting turn that had failed to save them, of the splintering crashes and the merciless bruising shock of the collision with the mountain.

The Land of the Scarlet Sky

MEMORY did not return at once, as he recovered. He found himself lying in the bottom of a dark, cramped place, with a soft human body beside him. A hoarse voice, evidently that of the bearded man, was muttering curses, while heavy feet, apparently belonging to the same individual, were carelessly trampling George's legs.

Then George caught the acrid odors of burning paint and gasoline.

His memory returned. He knew that the plane had crashed into the black mountain wall, that it was wrecked and in flames. The soft body against his was that of the girl. And it was the big man who was trampling on the others.

George tried to struggle up, pressing a hand to his head to try to stop the dizzy pain, to clear the faintness from his vision and the ringing noises from his ears, to sweep the misty clouds of pain from his mind.

A suffocating breath of flame came from the forward part of the ship, where the blaze had evidently started.

The fuselage was on its side, George saw. The door was above them. And the big, bull-like man, walking upon their bodies as carelessly as if they were sacks of grain, was struggling to open the door.

Suddenly there was a sharp snap, as if he had broken a lock with the strength of his great, heavy hands. A moment later the door was thrown back, revealing the sky above, crimson, dark and sullen, red as if deluged in blood.

For a moment the strange scarlet sky was in view. Then thick masses of black smoke, touched with flickering, lurid yellow flames, floated across it. George heard the increasing roar of the conflagration.

He tried to struggle to his feet, still rubbing his throbbing head.

"Thanks, Mister," came the hoarse voice of the giant, mockingly.

The huge man placed one heavy foot on George's shoulder, while he was still on his knees, sprang forward. He clambered through the door in the uppermost side of the side.

George was sent crashing to the bottom of the compartment again, under the force of the ruthless kick.

Choking black smoke, so hot that it seared his lungs, was filling the little space when it struggled up again. The roar and crackle of the flames was growing swiftly louder. A black and yellow canopy of smoke and flame was rolling above the door.

Still his head throbbed with dull pain;

his thoughts were slow, confused; he reeled, his knees buckled uncertainly.

"Not much time, now," he muttered. "Guess they are all gone, in the front part of the ship."

He bent beside the girl, lifted her with an effort, fighting to control his shaking knees. She was conscious.

"What's—matter?" she whispered in a slow, uncertain voice.

"Plane smashed," he said. "Burning. We must get out! Able to help? Do your best, but we have time."

"I'll try," she murmured through white, compressed lips.

He lifted her in his arms. She grasped the side of the door, he pushed her up. She scrambled through it. For a moment she darkened the opening. Then she was gone from sight. Smoke and fire were still rolling over the opening.

The forward part of the plane was already an inferno. White heat drove down the aisle. Blinding, blistering smoke swirled into the compartment. Gasping for breath, tears streaming from his eyes, perspiration running from his skin under the scorching heat, the engineer stood still a moment, to recover from the exhausting effort that had been required to lift the girl through the door.

A choking groan came from beside his feet.

He bent, wiping the tears from his smoke-blinded eyes, distinguished the limp little body of Cann, lying in a little heap in a corner of the compartment, sprawled over the back of a seat.

"Poor Cann can't," he muttered in grim horror, as he began the very serious task of lifting the inert body through the door above him.

IN ever denser volumes, the smoke was pouring into the compartment, blinding, suffocating. Tears were streaming from George's eyes, so that he could hardly see the bright square of the door above. The hot smoke seemed to dry and scorch his throat and lungs. He coughed, strangled. Sweat was pouring from his body; the heat was almost intolerable.

And he was still dazed and groggy from the blow that had stunned him when the great plane crashed. His head throbbed with leaden pains; his ears rang queerly; his thoughts were slow, confused. But he did not hesitate in beginning the grim task of saving the little man who had questioned him so persistently in his thin, bird-like tones.

Fighting the heavy inertia that tugged at him, George lifted the limp body and thrust it up toward the door. It was a terrific task. Some malignant demon seemed to be pressing back against him. His aching muscles relaxed, despite the fiercest effort of his will, the unconscious man fell back into his arms.

George bent, sucked in a deep breath of the cooler air that hung in the bottom of compartment, and raised himself, thrusting the body of the little man up again. At last his arms straightened; the still body was outside, lying beside the door, atop the fuselage.

A blistering tongue of lurid yellow flame licked through the compartment, up through the open door. George gasped and strangled from the hot breath of it. He felt hair burned from his head, felt the bare skin of his face and hands scorched.

Reeling from exhaustion and the lingering effects of the blow he had received when they fell, he bent for another gasping inhalation of the still breathable air in the bottom of the compartment. Then he stood up, grasped the sides of the door, leaped, and struggled to draw himself through it.

Burning smoke swirled up about him. He strangled, tried to hold his breath. His muscles cracked. The effort seemed almost beyond him, in his weakened condition. And an infernal river of smoke and flame seemed pouring across above the door. He shrank back from it.

Then he saw Cann's inert hand, still hanging in the door—glimpsed it through streaming, smarting eyes. He had to get out, to save the little man.

With a fast fierce effort, he swung himself up, got his feet upon the edges of the door, straightened up in a blast of smoke and flame. In a moment he had snatched up

Cann again, and leaped, blindly, desperately, into space.

He came down on bare, hard rock. The smoke was still blinding, he could feel the beating radiation of heat from the inferno which he had just escaped, but he was out of its intolerable area.

Gasping in great breaths of the cooler air, he dragged Cann over the rock, to where the heat was bearable. He dropped his limp burden, still drawing fresh air into his tortured lungs, and wiped his smarting eyes.

An amazing world he saw, when he was able to open his painful eyes. Half of it was hidden by the dense clouds of smoke and the lurid curtains of yellow flame that leaped from the blazing wreck of the plane; but in the half that he saw was matter enough for wonder and amazement.

The sky was red, intensely crimson, dark and oppressive. Like a dome cut from a monster ruby, and lit with a dull, sinister light from beyond. It was unbroken by cloud or sun or star. A pall of scarlet gleam, sullen and terrible.

Beneath the lowering, crimson sky was a barren waste of black rock. It resembled obsidian, without the glassy luster of the volcanic glass. It was a dead, dull black, somber and unrelieved by any gleam. It did not even reflect the angry fire of the scarlet sky.

It seemed that they were at the bottom of a vast pit or abyss, for sheer black precipices, like that against the foot of which the plane had crashed, rose about them in a rugged wall, leaping up to inconceivable heights.

George estimates that the diameter of this crater or pit must have been ten or a dozen miles, and he thinks the cliffs that ringed it must have been fully five miles high. No elevations of this abruptness are found on the earth, though several are to be observed upon the moon. The walls of several lunar ring-craters rise vertically for several miles. This abyss appeared to be of similar formation.

The floor of the pit was a rugged, tortured wilderness of black rock, cracked and scarred, pitted with innumerable chasms,

thrown up in miniature peaks, twisted into grotesque fantasies of lifeless black stone.

George saw no tree, no bird or insect—no living thing at all.

He had no time to wonder at it, then. He merely swept the weird horizon of scarlet sky and stupendous dull black cliff with a single glance, and turned back to the burning plane.

An Explanation

WHERE was the girl? She had been conscious when he helped her through the door. Had she been able to reach a safe distance from the flaming ship?

He heard a faint cry, and found her lying on the ground, several yards from the burning ship. She had been able to slip from the upper side of the fuselage to the ground, to stagger away a few steps before she collapsed.

George carried her out of the smoke, and placed her beside the still inert body of Cann.

She was still conscious, but weak and dizzy, suffering from concussion.

"Where are we?" she whispered. "The sky looks red. And these black mountains—they are so high!"

"I don't know," George said. "We'll think of that after a while. I was almost wondering if I wasn't seeing things. But we have a patient here to look after."

He bent over Cann's limp body.

"Oh!" the girl cried suddenly, with pain in her voice. "You are all burnt! Your face, and your hands! You stayed to carry us out!"

"What else could I do?" George asked.

"There was another man that didn't stay," the girl said. "He trampled all over us, and then climbed out and left us to burn."

"Wonder where the kindly fellow is?" George said. He looked about them, over the rugged, desolate wilderness of twisted black stone.

But George paused to wonder again at the eldritch landscape spread out before him. The barren, lifeless waste of burned and tortured black rock. The mighty cliffs that plunged up beyond it—higher than any

earthly mountains, so high they seemed unreal. They were nightmare mountains; cruel, looming crags from some drugged dream. Their rugged faces swept up far toward the zenith, surrounding the horizon. George had an unpleasant sense of oppression, as if those lofty, ebon walls were crowding them, smothering them.

And above the black peaks the sky was crimson, red as clouds of blood-mist, red as a dome of ruby lit with dull, sinister lights. It was lowering, gloomy, oppressive as the bald, looming walls—it shone with a dark and sullen glare.

The red of blood. The red of horror. The red of death.

George Cleland was frightened by it—though he took care not to show the girl his fears. He dropped his gaze from the fearful wonder of the new world, and resumed his slow examination of Cann's body.

The little man was still unconscious. His clothing had been scorched and torn. His thick glasses were lost, and he looked oddly different without them—small and weak, like a child, or perhaps a crippled bird. His right upper arm had been broken. George pushed up the sleeve to examine it. On the skin was the blue print of a man's heel; the bull-like man who sat opposite the girl had stepped on it, breaking the bone.

George straightened the limb, and tried to set it. But he could find nothing satisfactory to use for splints. There seemed to be no tree or bush—or any living thing at all—in the wilderness of black rock, from which he could get a splint. But during his search he made a curious discovery.

The barren waste of dead black stone was scattered with huge green crystals. Clear and transparent, as if cut from monster emeralds.

In shape, they resembled snow-crystals, as seen through the microscope. Six-pointed stars, with a delicate, symmetrical fretwork, never the same in two crystals, between the points. But they were far huger than snow-crystals. Three feet from point to point. They were usually three or four inches thick. The first one that George discovered, lying in a deep crack in the black

rock, not far from where the plane had crashed, weighed about twenty pounds. He is unable to make any suggestion as to the material of which it was composed, though it seems that it must have crystallized in the air, and fallen as a snowflake falls in our world.

While George was working over Cann, the girl told him something of herself.

"My name is Juanita Harvel," she said. "Dad has a fruit ranch near Los Angeles. I was going up to Berkeley, to the University. I was to graduate this year—but my prospect, right now, aren't very good." She smiled a little. Then soberly, "Where can we be?"

"Your guess is as good as anybody's," George told her.

"Do you think—" she asked, and paused oddly, "do you think that—we could be—dead? The plane smashed. It may have killed us all."

"Not a bit," George cried. "For myself, I feel very much alive and real—especially where the skin was cooked so it's coming off!" He grinned painfully.

"Oh, I'm so sorry for you!" Juanita cried.

"That's all right," George assured her. "It won't make much difference, if I'm dead. And if I'm alive, I'll get well. We can cook up some sort of theory to account for it all. I suppose you've heard about the so-called Fourth Dimension?"

"Yes," I've heard about it," she admitted. "But as for understanding it—"

"There's been a lot of bunk written on the subject, but nobody seems to know much about it. Einstein's theory of relativity, however, introduces a fourth dimension, which is not different in any way from the three other dimensions we know. He says that to an observer on a different planet, the fourth dimension, or part of it, might appear as a spatial dimension; and one of the dimensions that appears spatial to us, would be, for him, partly or wholly the fourth dimension.

"Of course, I may be putting an interpretation on his work that he would not approve. He devised the hypothesis of the

four-dimensional continuum, or 'space-time' as it is more generally called, to account for known facts. He was not interested in other worlds that might lie beside our own, billions of light years distant in our space, but touching the earth in the fourth dimension.

"The plane, you know, flew into a circle of purple light that appeared suddenly ahead of us. It may have been a sort of a gate to this other world, through the fourth dimension. This planet may be so far distant in space from our own world that it is in another universe, yet touching it in the fourth dimension."

"How could that be?" Juanita asked in a puzzled tone.

"I don't know whether I can explain it very clearly. But a favorite method in such discussions is to form an analogy in dimensions of a lower order. Suppose we were two-dimensional beings, with length and width, but no thickness. Suppose our world were on the surface of a sheet of paper. And suppose this planet were on the other side of the sheet, just opposite.

"Being two-dimensional beings, we could not conceive of the third dimension, which is the thickness of the paper. We could not know of the other world so near, nor could we reach it except by going around the edge of the sheet.

"But suppose somebody stuck a pin hole in the paper, through the two worlds on opposite sides. Then we might blunder through, into a new world outside of our knowledge, just as the plane flew through that purple cloud into this strange place. So we must have fallen through a hole in the fourth dimension!"

"And what can we do about it?" Juanita asked.

"I don't know. My theory may be the bunk, anyhow. But there was evidently some phenomenon, either of natural or artificial cause, which swept the plane through the 'continuum' from our world, to this. It may happen again. We must watch. If we see it happen, we may be able to find the cause, and manipulate it to act in reverse. to take us home. A slim chance, but our best bet!"

It was not very long before the flames of the wrecked plane died away. Only a mass of bare, blackened metal was left, scattered with charred bones. When the wreckage was cool enough, George found some traps of metal in it which he used as splints on Cann's broken arm.

The little man remained unconscious.

For a very long time they stayed there, near the wreck—they did not know how long. George had lost his watch, and Juanita's had been broken. There were no days in this weird world, no sun. The somber, angry crimson of the sky did not change, no luminous object appeared within it.

They grew thirsty, for there was no water to be had. They felt the pains of hunger. They reeled with weariness, and dared not sleep. But the physical hardships, at first, were more endurable than the mental torture.

They were in a strange world, absolutely foreign. It seemed that chemical and physical processes here did not always follow the same course as on their own earth. There was no sun—only the sullen gloom of the crimson sky. No living things except themselves to break the terrible monotony.

Blood-red Rain!

THEIR minds struggled for an explanation of it all. How had they come here? Was there any chance for escape? What was the meaning of the red sky? of the huge green crystals that scattered the stony wilderness? Of the inconceivably colossal black mountains?

The air was neither cold nor hot, its temperature remained constant. Faint radiation of heat, as well as light, seemed to fall from the somber scarlet sky. George suggested that the higher atmosphere was filled with some radioactive gas.

Cann never recovered consciousness. Nor did he die of his hurts. He was murdered. It came about in this way.

They must have been in the fantastic world of the adventure for many hours, for both George and Juanita were suffering

keenly from hunger and thirst. They were still watching beside Cann. During those long, lonely hours, they had talked a great deal. They felt drawn together by a powerful sympathy, as if they had long been friends.

Both of them were startled immeasurably by the bullet. They had been waiting there a very long time, anxious, alert, waiting. They had been fearful of unknown dangers, fearful of the weird life that this world might possess, fearful even of the dead, endless silence.

The bullet came whining angrily past them. It struck the sheer face of the black cliff behind them with an explosive *plop*, and showered them with fine fragments of broken rock.

George started uncontrollably. Juanita half screamed, clapped a hand to her lips, and apprehensively grasped the engineer's arm.

"What is it?" she gasped.

"Sounded like a bullet," he said, uneasily. "Suppose the inhabitants of this world have firearms?"

"Look!" she whispered suddenly, in a strained voice. "Something moving!"

She pointed out across the cragged wilderness of dull black rock. Following her slender arm, George glimpsed a dark object slowly rising into view behind a twisted black boulder.

A little wisp of bluish smoke floated up beside it. They heard a crashing report, as another bullet sang past them and thudded against the precipice behind them, scattering bits of shattered rock.

"A man!" Juanita cried.

George saw that it was. A human head, covered with unkept black hair and a thick stubble of black beard. A human body rising behind it, grimy, clothed in tattered garments. It was the huge, sullen individual companion of their voyage.

"Why, it's an old friend!" George whispered. "The man who admired you so much in the plane!" He grinned grimly.

"What does he mean, shooting at us?" Juanita cried.

"Guess it won't hurt to ask him," George said. He raised his voice, and shouted at

the man. His tones came oddly shrill and strange from his dry throat.

"What do you want?" he called.

The man did not reply. But he left the shelter of the black boulder and stalked cautiously toward them, a huge, terrible figure, a pistol ready in his hand—a heavy automatic.

"What's the idea, shooting at us?" George shouted again, in a shrill, thirst-cracked voice.

"I'm dyin' for a drink," the huge man growled back. "No water in this damn place! I'm thirsty as hell! I've got to drink! Blood!" Again and again, as he ran toward them, he repeated the word in a voice that had become almost a scream. "Blood! Blood! Blood!"

"He's crazy!" George muttered.

Cann still lay unconscious on the bare black rock. When the huge man, charging down upon them, was thirty yards away, he shot again—into the body of the unconscious man. George saw the body jerk with the bullet's impact.

"Oh!" the girl cried out in horror. Then whispered, "Let's run! We can't do anything!"

George took her hand; they ran off along the foot of the Cyclopean wall of dull black stone. They were weak from thirst and hunger and weariness; their bodies seemed very heavy. And the black rock over which they fled was so cracked and twisted, pitted with yawning chasms and broken with peaks and boulders and hummocks, that real running was impossible. Many times they stumbled. They leaped, and crawled, and climbed—jumped bottomless cracks, crept across narrow ledges, clambered up cliffs and boulders.

THE huge maniac shouted at them to stop, but they paid no heed. He fired at them twice. The bullets screamed past, and ricocheted among the black summits before them.

"Down!" George cried.

He leaped into a deep traverse crack in the black rock, between two massive, twisted summits, helped Juanita down beside him. They were out of the big man's sight. Swift-

ly, they stumbled on, down the narrow ravine.

Half an hour later, when they had covered perhaps five hundred yards, they came up to where they could see the lunatic again. The huge fellow was bent over what was left of inoffensive little Cann, tearing at his body like a hungry wolf.

Horrified, they stumbled on again.

Long hours—tortured ages—crept by. On and on they drove themselves. A man and a woman lost in an alien world. Sick with fear. Tortured with thirst. Weak from hunger. Reeling from fatigue. Driven on by the horror of what they had seen—one human being rending another like a ravening beast.

They did not travel many miles. For they were weak. And the wilderness of black rock was incredibly rugged, twisted into fantastic, sharp-edged masses, carved with wild, volcanic energies.

The Cyclopean cliffs still hemmed them in, an impassable barrier, inconceivably lofty. Grim preepices leaped sheer half way to the zenith, all about them. Those mighty black cliffs were terrible, oppressive, like the stone walls of some ancient prison.

The scarlet sky still gleamed above the jagged summits of the ebon cliffs, with a dark and sullen glare, changeless, monotonous. There was neither day nor night; no sun nor moon nor stars ever broke the monotony of grim, forbidding crimson twilight.

It was a long time after they had left the sight of the wreck, when the red rain fell. Memory of the hideous orgy of the maniac already seemed faint to George; it had become unreal, a fantastic horror so far past that it did not matter.

Huge red drops began abruptly to fall from the crimson sky.

But they were not water that could be drunk—the laws of nature, or at least the chemical composition of the atmosphere, seemed to have been different on that weird world.

The great drops, red as blood, were at least a foot in diameter. They came thudding down with terrific force, scattering the waste of black rock. They did not spat-

ter. They remained lying about, in spheroids shaped like drops of mercury—but larger than footballs!

George and Juanita sought shelter in a cave, beneath a sloping ledge of dull black rock, while the weird rain was falling.

The ground was by no means covered with red globules. George estimates that no more than two or three fell on every hundred square yards.

"Must be some new chemical, with an enormously strong surface film," George speculated. "Mercury forms round drops like that, or water dropped in fine dust. But these drops are huge, compared to those. Atmospheric conditions here must be quite different to what they are on earth. You remember those big green crystals we've been finding. They must be a sort of snow, that falls here. Some chemical crystallizing in the air, and falling as snow falls on earth—"

"There's one!" Juanita cried.

She pointed from under the sheltering ledge of dull black rock. A broad, rugged ravine lay before them, a deep, cruel scar that bore witness to the cataclysmic birth of this alien world. On its farther slope, fifty yards away, was a glitter of green, standing out against the dead black of the rock. A huge, six-sided emerald crystal, sparkling and brilliant, like a snow crystal tinted green and enormously magnified.

Another of the riddles of this strange world.

Hours went by. The enormous red drops widely scattered still thudded down from the sky. The wanderers could see several of the puzzling scarlet spheroids. Suddenly George noticed that those they watched were dwindling in size.

"Look!" he cried. "They're going away. Evaporating, I suppose. Must be some red gas in the sky, which condenses and falls, as rain does on earth. And they evaporate, to form clouds again."

It was not long after that an amazing phenomenon took place. A falling red drop happened to strike the green crystal that Juanita had pointed out. George chanced to be watching the green formation speculatively when it occurred. He heard the

crashing explosion, saw a vast cloud of luminous purple vapor rise, as if some violent chemical reaction had taken place between the scarlet spheroid and the emerald crystal.

The great burst of shining red-violet vapor rushed up as suddenly as the white smoke of a bursting shell. It formed an enormous cloud. The cloud of purple contracted swiftly. But then it seemed to form an immense disk, which they viewed obliquely.

Nearing the End

A FEW seconds went by, as they watched in astounded wonder.

Then the purple disk contracted swiftly and vanished.

George broke their silence with an excited cry, which came queerly through his dry throat.

"The purple circle that came in front of the plane looked just like that!" he cried. "We have seen the gate to our world opened again—I am sure of it—"

"There's a bird!" Juanita broke in. "See!"

She pointed to a little gray sparrow, flitting uncertainly from where the purple disk had vanished. It circled aimlessly, rose in a wild, bewildered flight, became a little brown speck against the sullen crimson sky and vanished . . .

"Yes," George said slowly. "The bird came through it. A sparrow from our own world! It blundered through just as the plane did. I wonder—" He fell into silent speculation.

"You wonder what, George?" Juanita asked.

"I must think, dear!"

He patted her hand. A little hand, thin from starvation, red with cuts and scratches gained in their long struggle through the desert of wild black rocks.

Feeling a faint thrill of pleasure at the "dear", she fell silent, and sat watching him with cool gray eyes brightened with a faint light of hope. A long time went by, while the engineer remained silent, immersed in thought. The red rain stopped.

"We might try it!" he said suddenly. "There's no way of telling whether it will work the other way. We are pretty likely to kill ourselves in the experiment. But it's better to take a pretty big risk than end our days here, eh?"

"You mean—" Juanita cried tremulously. "You mean—there's a chance to get back home?"

Her gray eyes were wide with excitement and sudden hope.

"A chance," George said. "A bare chance. But better than staying here until we die for want of food and water."

"What is it?" she cried.

"We can find one of the green crystals, of course, and dump it one one of the red drops. There ought to be another explosion—and another opening of the gate to our world. I don't understand the formation of the purple disk, of course. But something that results from the explosive union of the red drop and the green crystal seems to break down the barrier between the two worlds—some form of radiation, perhaps.

"Are you willing to try it?"

He looked into her cool gray eyes.

"Of course, George!" She smiled at him. A little smile, wan and strained. It had meant an effort against the weakness of hunger and the torture of thirst. "I'll do anything you want to try. But we must hurry. The red drops, you know, are going away!"

"That's right!" George replied in the hoarse whisper that his voice had become. "I'd forgotten. We must try it right away. It must be a rare coincidence for the green crystals and the red drops to be on the ground at the same time."

Weak and reeling, they rose, and tottered out from beneath the sheltering black ledge. Searching down the long ravine, they came upon a few of the scarlet spheroids. Already they were shrunken to the size of a man's fist. They were evaporating swiftly; little streamers of pinkish vapor were rising up from them. One of them dwindled and vanished, even as they were watching it.

For half an hour, they could not find one of the green crystals.

Then Juanita's keen eyes discovered one.

standing on edge in a narrow crack in the dull black rock. George bent beside the crack, lifted it out. A great, six-pointed star of glistening green, brilliant and transparent, the feathery structure between the points delicate and perfectly symmetrical.

It weighed no more than thirty pounds, but the engineer, weakened by long hardship, reeled beneath the burden of it.

"Now to find one of the red drops," he muttered.

They struggled on down the ravine, George staggering beneath the weight of a blazing thing that might have been cut from a monster emerald by some gargantuan jeweler, Juanita dragging herself along by his side.

Once they came upon one of the scarlet spheroids. But it was no larger than a baseball, when they first saw it. As they staggered up to it, it dwindled swiftly, seeming to hiss like a drop of water on a hot stove. It was gone.

A sound came suddenly from behind them. A hoarse shout, insane, incoherent.

George turned in alarm. He saw a man running after them, a huge man with a black, bearded face—and red blood on his hands. The man who had reached this alien world in the plane with them. The man who had fallen like a wolf on the body of little insignificant Cann.

AN automatic pistol was in his blood-stained hand.

"Guess he's finished Cann," George whispered. "Looking for fresh blood."

"Oh, it will be dreadful if he catches us," Juanita whispered. "Let's run!"

"I don't feel exactly fit for a Marathon!" George muttered.

But they broke into a stumbling run.

The wild, blood-stained figure behind them shouted, gesticulated. Then they heard shots. Bullets whined and screamed about them, crashing on the dull black walls of the canyon.

They ran on—or tried to run. It was a pitiful, staggering pace; they were almost too weak to move. George, reeling under the burden of the green crystal, was gasping for breath. His tongue, swollen and

leathery, seemed to fill his mouth, choking him. Juanita dragged her feeble, abused body along, keeping back any word of complaint.

The man running behind them was far stronger; he had had food recently. Swiftly he gained upon them, pausing to fire wildly after them with the pistol whenever a straight section of the ravine put them in his sight for a few minutes.

Then they came to the end of the canyon.

Rugged walls of dead black rock rose before them, sheer, impossible to climb. They stopped, looked at it. George dropped the green crystal. He looked at Juanita.

"Well, I guess this means good-by," he managed to articulate, in a hoarse, grating whisper. "Hope he makes it merciful. Anyhow, being with you has made it a lot more pleasant."

He took Juanita's hand, looked into her cool gray eyes, and tried to grin.

For the first time in their terrible adventure, Juanita burst into tears. She fell weakly into the engineer's arms, sobbing uncontrollably, clinging to him with her thin, bruised arms.

The huge, blood-stained man came into view again, a hundred yards away. He stopped, threw up his automatic, and began to shoot. Bullets rang against the cliff behind them, sent splinters of black rock flying.

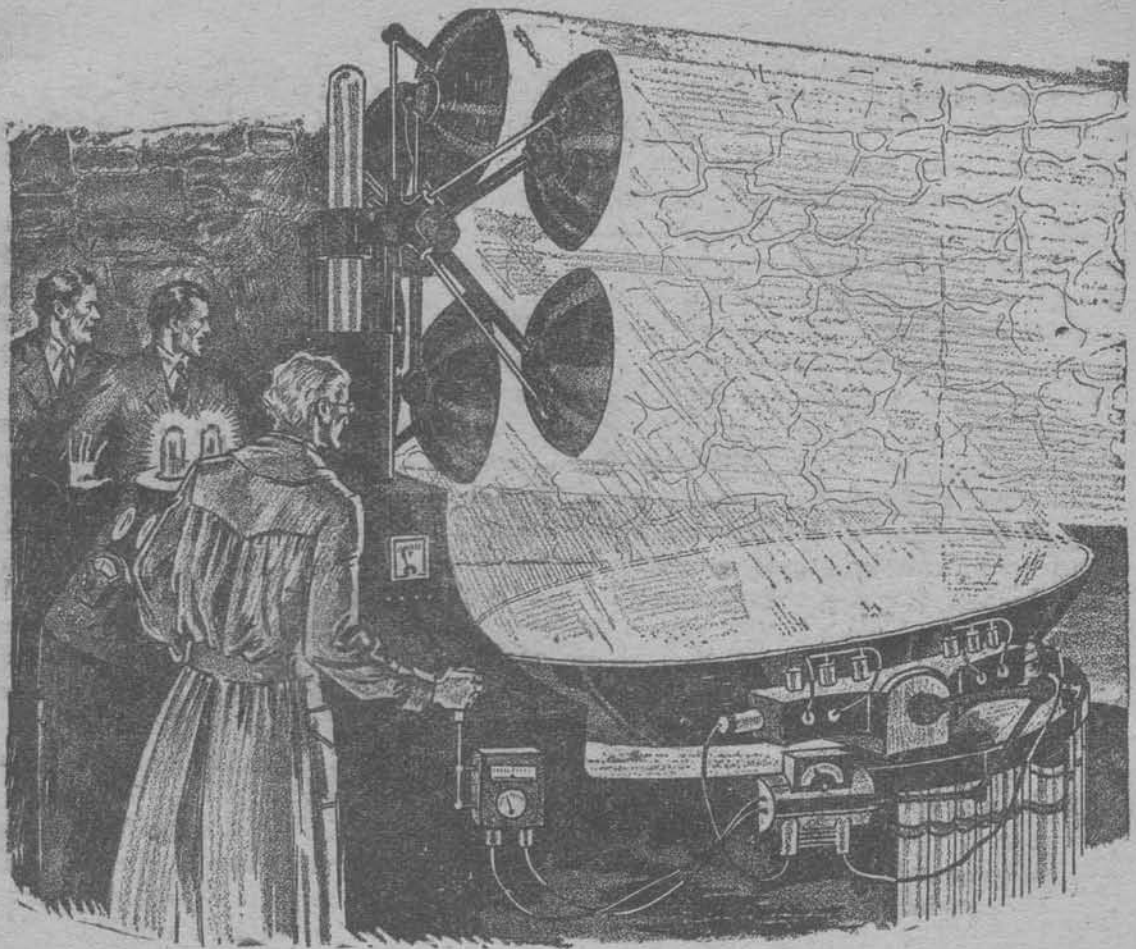
Then George, holding Juanita's sobshaken body in his arms, looked over her shoulder and saw the thing lying in a little crevice in the ebon rock, almost at their feet. A red spheroid, nearly a foot in diameter, with pale pink vapors hissing up from about it.

Several of the huge, strange crimson drops must have run together in the crevice, forming a single larger drop which did not evaporate so rapidly.

"Buck up!" the engineer cried, pushing the girl to her feet. "We'll try it yet. We'll beat our friend out of his dinner!"

He picked up the huge, glistening green crystal that he had dropped, tossed it into the crevice, upon the spheroid of scarlet-red liquid.

(Concluded on Page 1469)



The Cosmic Gun

By Morrison F. Colladay

HARTRIDGE was dead, and his body was not a pleasant thing to look at. I had gone with Dr. Goodrich, who is coroner's physician, to the old-fashioned house where the dead man lived alone except for a cook and a gardener who went to their homes at night.

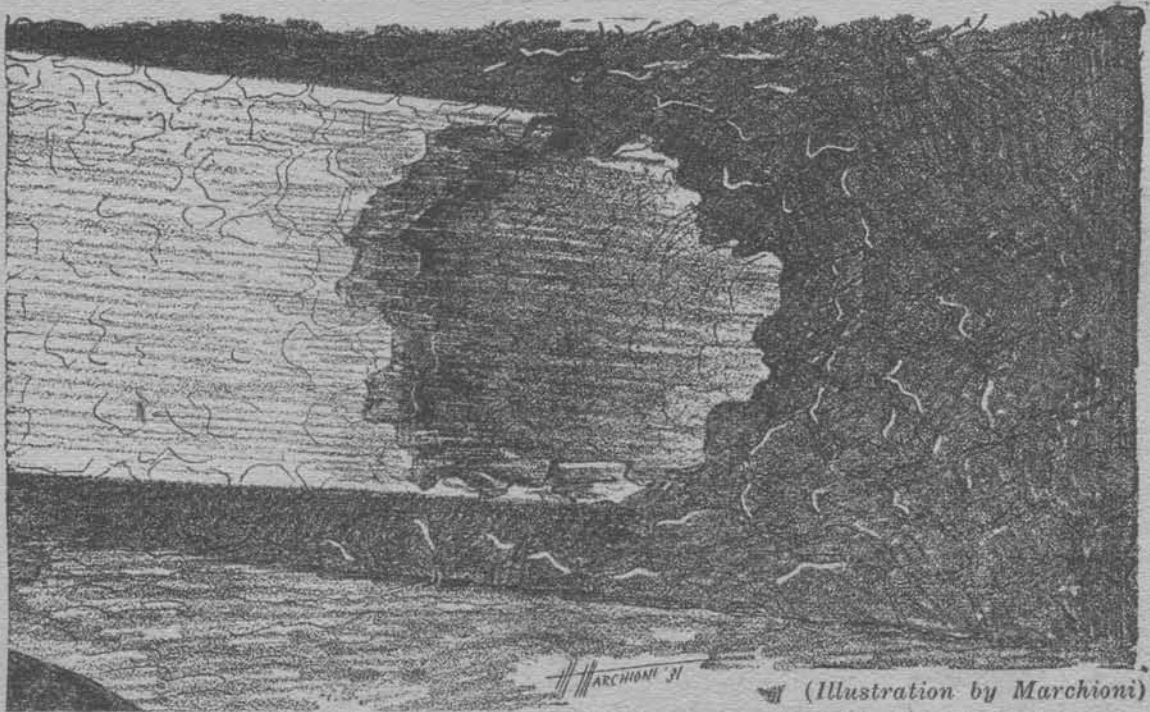
I had known Hartridge fairly well but not intimately. He was a lonely sort of individual who usually kept to himself. He possessed enough money to live on and he spent his time in scientific research. I judge from what I have since learned that his life was embittered by the curious way he was cheated of fame time after time because of a few weeks' delay in announcing discoveries.

For instance: he was working on what are

now known as X-rays when Roentgen got the credit for discovering them; he had isolated a radium salt before the Curies' achieved fame; he had been investigating the mysterious, highly penetrating short rays that come from outer space for years before Millikan made his sensational announcement.

Dr. Goodrich and I were familiar with Hartridge's most recent work because he had become alarmed by something that happened a few days before his death and came to us for advice. We thought he was suffering from hallucinations due to overwork and argued him out of his fears.

Now he was dead, and the condition of his body indicated that the fears we had made light of were justified. Perhaps the



ARCHIONI 31

(Illustration by Marchioni)

A cylinder of incandescence extended from the machine. I felt I was looking down a glowing tunnel for hundreds of miles.

easiest way of explaining our part in the tragedy will be to give an account of the inquest.

The authorities were convinced that Hartridge's death was a natural one. However, the dead man had carried a large amount of accident insurance which would accrue to the cousins who were his nearest relatives if it could be proved that he died as the result of violence and not of disease.

It was to lay the ground for a contest in the courts that Dr. Goodrich and I were cross-examined by Patterson, the lawyer for the heirs. An inquest is a more or less informal proceeding in which the ordinary rules of evidence are often ignored. Sufficient latitude was allowed the attorney by the coroner to enable him to put on record not only the few facts we knew but the things Hartridge had told us. What I have written is from the copious notes I made during the hearing.

* * * *

Patterson was questioning Dr. Goodrich. "Where were you notified that Hartridge was dead, Dr. Goodrich?"

"About nine o'clock Saturday morning."

"What did you then do?"

"I went to the Hartridge house to examine the body."

"What time did you reach there?"

"I should say, ten o'clock."

"It took you an hour to drive a couple of miles?"

"No. I stopped for my friend Warriner and took him with me."

"Was there any reason for taking Mr. Warriner?"

"I thought so. He was present a day or two before when Hartridge told me about certain experiences he had had recently which made him afraid he was going to die."

"I presume Mr. Hartridge consulted you as a physician?"

"He did."

"Isn't it somewhat unusual to have a layman present at a consultation?"

"It was informal. Hartridge knew Warriner better than any of his other neighbors—the poor fellow apparently had no intimate friends—and when he became alarmed over certain occurrences he told Warriner about them. Warriner thought Hartridge's

statements indicated some sort of mental trouble and suggested that I be consulted."

"Were you acquainted with Mr. Hartridge?"

"No, I had never seen him before the morning I was called to Warriner's house, to the best of my knowledge."

"You and Mr. Warriner have known each other for a long time?"

"Yes, we've been friends for many years."

"Did you examine Mr. Hartridge?"

"I did."

"What did you find?"

"I concluded he was on the verge of a serious mental breakdown."

"How did you reach that conclusion?"

"As a result of my examination and of the story he told me. In fact, the story had more to do with my conclusion than his physical condition. In a great many obscure mental illnesses there are no physical changes discernible until the disease has reached an advanced stage."

"You found Hartridge normal physically?"

GOODRICH hesitated. "I should hardly care to go that far. He was in a highly nervous state."

"I gather from what you have already testified that you now think that highly nervous state was justified?"

"Perhaps it was. At any rate, he was killed in the way he expected to be killed."

"Now, doctor, suppose you tell us as simply as possible exactly what it was Mr.

Hartridge was afraid of?"

Goodrich frowned. "It is a little difficult to make the poor fellow's fears sound reasonable," he objected.

"I don't want you to try to make them seem reasonable," Patterson said patiently. "Just tell us what they were."

"I think perhaps it will be better to give

an account of that first interview with him as I remember it, and repeat the things he told me."

"Was Mr. Warriner present during that interview?"

"He was. Mr. Hartridge insisted he should be."

"Well, go ahead, doctor, and tell us exactly what happened in your own words."

"I went to Warriner's house and found Hartridge there. Warriner had made the appointment. As I said, I had never to the best of my belief seen Hartridge before, though Warriner had often spoken of him."

"Did you know anything about him or what he was doing?"

"More or less, of course. Hartridge was, in a way, a rather famous man among physicists. I had often wanted to meet him."

"Go on, doctor,"

prompted the lawyer as Goodrich paused.

"When I reached Warriner's house I found a badly frightened man."

"You mean Hartridge?"

"Yes. He was in a highly nervous state which was intensified as soon as I began to question him about his fears. Finally I administered a sedative and after it had

WITH modern investigations into the shorter wave lengths of the electromagnetic spectrum, such as x-rays, radium rays and cosmic rays, a limitless field of conquest is opened to man. For in these unknown ultra-short waves there reside not only great sources of power and controllable energy but also potentialities for great destruction.

The cosmic rays, for example, may be among the most potent forces that affect our lives. With their ability to penetrate sixteen feet of lead with their terrific velocity, they may have a disintegrating effect on animal tissue that may be the cause of the death by old age of all living things. On the other hand, they may be the source of a most terrible weapon of warfare, were they possible of concentration and control. Mr. Colladay, whose stories ring so with life and truth, gives us an exciting possibility that may occur with the letting loose of tremendous cosmic forces.

taken effect, succeeded in getting a connected story from him."

"Yes. It was the second time he had heard it."

"Go on, doctor."

"I had perhaps better explain the kind of scientific work Hartridge had devoted his life to. He was an authority on X-rays and radium. In fact, he wrote several monographs which received wide recognition. During recent years he had devoted his time to an investigation of what are now known as Millikan rays. A few years ago they were not known by that name—they were not known at all. It was suspected that there were very short, highly penetrating rays which reached the earth from outer space, but nothing was known about them. Hartridge found the subject fascinating and spent the last years of his life investigating them."

"This isn't a college lecture room, Dr. Goodrich," interrupted the coroner. "Suppose you tell us in plain words what killed Mr. Hartridge?"

Goodrich shrugged his shoulders helplessly as Patterson jumped to his feet. "I think it most important that Dr. Goodrich be allowed to testify in his own way. This is no ordinary murder and can't be treated as if it were."

The coroner looked startled. "Are you seriously suggesting that Mr. Hartridge was murdered?" he asked.

"Suppose you ask Dr. Goodrich that question."

"Ver well, I shall. Er—ah—Dr. Goodrich, you consider Mr. Hartridge's death a natural one, do you not?"

"I do not."

The coroner stared at him and there was a stir in the courtroom. "You mean that he met with an accident?"

"I mean there's no question in my mind that he was deliberately murdered!"

The coroner took off his glasses and nervously wiped them on his handkerchief. There was a buzz of conversation among the spectators and the reporters present pricked up their ears and wrote industriously. Meanwhile Goodrich sat gazing somewhat belligerently at the coroner.

That gentleman pounded on the bench with his gavel. He fixed his eyes on Dr. Goodrich. "You have testified, doctor, that you believe Mr. Hartridge was deliberately murdered. There must be a murderer where there is murder, Dr. Goodrich. Have you any suspicion as to the guilty person?"

"I have a very definite suspicion."

A Surprising Story

THE coroner looked surprised. "Have you communicated this suspicion to the district attorney and the police authorities?"

"I have."

"Then I take it the matter is under investigation and there is prospect of an arrest?"

"I am inclined to answer no to both questions."

"That seems hardly possible, doctor."

"It happens to be true."

The district attorney laughed at me when I told him what had killed Hartridge and who I thought was responsible for the murder."

"Indeed." The coroner gently tapped the bench before him with his glasses. "Suppose, doctor, leaving the question of murder aside for the moment, you tell us exactly what did kill Mr. Hartridge?"

"Before I do that I shall have to explain briefly the nature of the Millikan rays."

"Please answer my question," interrupted the coroner a little peevishly. "We haven't time for a scientific lecture, though I have no doubt it would be interesting."

Goodrich frowned. "Doubtless your scientific knowledge is sufficiently extensive to



MORRISON F. COLLADAY

comprehend the reply I must make, but certainly the jurors will not."

The coroner sat back wearily in his chair. "All right, doctor, have it your own way, but make your testimony as brief as possible."

Goodrich turned to the jury. "I was not casting reflections on your intelligence, gentlemen, in my remarks to the court. There are only a few thousand persons in all the world who know anything about the Millikan rays. Hartridge several years ago investigated these short rays which come from outer space with enormous penetrating power. He found that there was nothing impervious to them. A thin sheet of lead is a shield against X-rays, but the Millikan rays will penetrate from five to ten feet of that metal."

The coroner looked meaningfully at his watch but the gesture was lost on Goodrich who went on.

"I must correct what I said a moment ago in one particular. I said that there was no substance impervious to the Millikan rays. I should have said it was supposed that there was not, until Hartridge invented his mirror. It reflected these rays and its composition was his secret. I have no idea what it is made of."

"That's very interesting, doctor," said the coroner, "but what has it to do with Hartridge's death?"

"I'll come to that a little later, if I may."

"Very well. Go on with your testimony, if you consider it relevant."

"I am calling the machine which Hartridge invented to deflect the Millikan rays a mirror, because it is more like a mirror in its action than anything else. You gentlemen of the jury doubtless remember that when you were boys you used to reflect the rays of the sun into the eyes of unsuspecting victims with a piece of looking-glass. Well, Hartridge's machine did this for the rays. It did more than this, however. It gathered them together in a focus, just as a lens gathers together the rays of the sun so that you can kindle a fire with them. Now remember that these rays are continually bombarding every portion of the earth with tremendous force. Hartridge had invented

a machine which would gather them together and direct them at any spot he desired."

The coroner began to look interested. "You mean the machine could be used as a weapon?"

"It is undoubtedly the most powerful weapon ever devised. With a big enough machine a city a hundred miles away could be destroyed in a few minutes."

"You mean Mr. Hartridge had a machine at his house that could do such a thing?"

"The machine Hartridge built was an experimental one. To destroy a distant city it would be necessary to construct a much larger machine."

THE coroner looked sceptical. "I presume, Dr. Goodrich, that Mr. Hartridge told you about this machine?"

"Yes."

"At the time you were called in to examine his mental condition?"

"I think I have explained that I found Mr. Hartridge as sane as you or I. Besides, I went with him to his laboratory and saw the machine itself."

"Oh, you saw the machine, did you? Did Mr. Warriner see it?"

"He was with me."

"I assume you didn't see it work?"

"Yes, we saw it work. I shall be glad to describe it in detail if the court desires me to."

The coroner hesitated a moment. Then he said, "If this machine is of such tremendous value as a weapon, perhaps it would be wiser not to describe it in open court."

"As you please. However, no description of mine would enable anyone to construct a similar machine. All I can do is tell what it looked like and how it worked."

"Do you happen to know, doctor, whether the government has shown any interest in this invention?"

"If you mean our government, no. Two foreign governments attempted to buy it from Hartridge, and I may say I am convinced that the agents of one of them murdered him to keep the machine from falling into the hands of the other. Or any other."

"You know which two governments tried to buy the machine?"

"I do. I think it would be hardly wise to mention them here. If you desire, I will write the names on a slip of paper for your information."

"Never mind, for the present. Suppose you tell us of your visit to Hartridge's house."

"I examined Hartridge in the morning, as I told you. That night Warriner and I went to his house."

"What was the particular object of your visit—curiosity?"

"No, I went because Hartridge had an idea that I did not fully believe his very improbable story. I saw he was sensitive about it and I agreed to go to the house and see his machine. Hartridge let us in himself. He had two or three servants, but they did not sleep on the premises. He was alone except for two big police dogs."

"Two police dogs, eh? Were they present when Hartridge died?"

"They were."

"Doesn't that militate against your murder theory, doctor?"

"I don't think so."

The coroner raised his eyebrows. "I should consider a criminal quite reckless who attacked a man in the presence of even one police dog."

"I neglected to mention that we found the two dogs dead with their master. Whatever had killed him killed them. Their bodies were in the same condition as his."

A rustle passed over the courtroom. The coroner's face was grave as he asked the next question. "You referred earlier in your testimony to the condition of the body of the dead man, but I have no recollection that you described it. In what way did it differ from any other body?"

"Hartridge had been dead only a few hours when I was called. I found his body was in an advanced stage of decomposition. It was bloated to twice its natural size and almost unrecognizable."

"Wasn't that very unusual, doctor?"

"Most unusual. You can easily verify the fact by calling the undertaker as a witness."

The Machine in the Cellar

"YOU said a moment ago that the two dogs were dead and their bodies in the same condition as Mr. Hartridge's?"

"I did."

"Where did you find the bodies of the dogs?"

"In the room with Mr. Hartridge."

"You judge, then, that the same agency killed them all?"

"There's no question about it."

"And what was that?"

"The machine Hartridge had invented for concentrating and reflecting the Millikan rays."

"You mean someone turned his own machine on Hartridge and killed him?"

"Exactly."

"I think you said that Hartridge was afraid of being killed in the way he was killed?"

"Yes, he was. It was this fear that brought on the nervous attack about which he consulted me."

"Why should he be afraid of a machine which he invented and controlled?"

"The trouble was he had built two machines and one had been stolen."

"You mean someone else has possession of one of them now?"

"He certainly had the night Hartridge was killed, and there is every reason to believe he still has."

"I see," said the coroner thoughtfully. "It was after this machine was stolen that Hartridge became alarmed for fear someone would kill him."

"Events have proved he had good reason to be alarmed."

"Did Hartridge have any idea who had the machine?"

"He was quite convinced that it was taken by the agent of one of the two governments which had unsuccessfully attempted to buy it."

"Was he suspicious of one rather than the other?"

"Yes, he was. He told me that the man he suspected had made veiled threats of personal physical harm if he refused to sell the new machine, together with all the secret

formulae which would make it possible to construct similar machines."

"Mr. Hartridge refused?"

"He refused with considerable vigor. He said the only government which would ever have an opportunity to use the machine was his own. The emissary of the foreign government gave him a week to change his mind."

"You say he threatened Mr. Hartridge?"

"I understand he intimated that if his government did not possess the secret of the machines it would certainly see that no other government did. Hartridge realized, of course, that the obvious way of silence him was to kill him."

"You were telling us," said the coroner, "of the visit you and Mr. Warriner paid to Hartridge's house."

"Yes. He took us to his laboratory, which was in the cellar. It contained a wilderness of apparatus which I did not understand—but I have made no effort to keep up with recent revolutionary developments in physics. However, the ray machine was not in the laboratory. After carefully locking the door he unlocked another leading to a sub-basement. We accompanied him down a flight of stone stairs and found ourselves in a large underground room, bare except for an instrument in the center which looked like a half dozen search lights joined together on an upright pedestal.

"Don't move from this side of the room," said Hartridge. "This machine is perhaps the most dangerous thing in the world today." I suppose I looked sceptical, for he continued, "You'll believe it before you leave here."

"You will remember that at that time I did not know the things I have testified to today. I knew in a general way about the Millikan rays. I knew that they would bombard every part of the earth all the way to ten feet of lead, but as they were time it was hard to think of them as particularly dangerous to human beings. I said something to that effect.

"I can't remember the exact words of Hartridge's reply, but I can give the substance of it. In the first place, a very small

part of the rays that bombard the earth reach its surface. Probably ninety-nine percent of them are absorbed by the atmosphere. If a human being were able to get above the earth's atmosphere he would be destroyed instantly by these rays as he would be by an electric current of tremendous voltage.

"THOSE that do get to the earth don't seem to do us any harm," I said.

"How do you know?" he asked. "If it were possible to protect ourselves from them, perhaps we should never die. They cause disintegration of tissue, and that is what death is."

"I'm not much interested in abstract theories and I interrupted him impatiently. 'Your machine doesn't do anything, I suppose, that one can actually see?'

"He looked at me silently for a moment. 'That is what I'll have to contend with,' he said half to himself. 'No one will believe me without proof.' He went on to explain the theory of the machine. He showed us the lenses which gathered the rays into a focus and reflected them in any direction. 'Come over here a minute,' he said. 'You see that hole in the wall, extending diagonally downward?' He pointed to what looked like a tube about six feet in diameter extending from the middle of the rear wall.

"Keep away from it!" he exclaimed as Warriner and I peered down into its blackness.

"What is it?" I asked.

"That's what the machine did. I've kept it directed at that one spot."

"Where does it go?"

"He shrugged his shoulders. 'Thousands of miles, probably. Right through the earth, for all I know.'

"About that time I began to wonder whether he wasn't really crazy, after all. He must have realized what I was thinking. 'I'll show you,' he said. 'You go over to the other side of the room again.'

"He pulled a lever which as far as I could see shifted what he called the lenses.

"I'm not sure I can describe what occurred. If I don't make it clear you can

call Warriner and let him tell what he saw."

"You both saw the same things, didn't you?" asked the coroner.

"Persons never see objective realities. What they see is the reaction of the visual centers in the brain to nerve impulses from the retina of the eye."

The coroner sighed: "Suppose we take that for granted. Tell us what your reactions were."

"As soon as Hartridge pulled the lever the machine was bathed in a violet glow rather like the light you see in the tubes of neon advertising signs. I was so much interested in this effect that at first I didn't notice the tunnel through the wall. Warriner called my attention to it. It was as if a cylinder of incandescence, itself invisible, extended from the machine. I felt as if I were looking down a glowing, pulsating tunnel of light for hundreds of miles.

"I'm afraid to run it anywhere else," said Hartridge.

"What would it do?" I asked.

"Destroy everything in its path, as it has here."

"Can't you regulate the power?" I asked.

"He nodded. 'I can diffuse the rays instead of concentrating them.'

"I'd like to see the effect of weak rays on animal tissues," I said. 'I'll be able to tell better than whether the experience you had last night was imaginary or not.'

"I think I can manage that," Hartridge said. 'I went out with my gun for a couple of hours this afternoon to steady my nerves. I got a couple of rabbits for tomorrow's dinner. We'll devote one of them to science.'

"He shut off the machine and went upstairs. A few minutes later he came back with the rabbit. He tied a cord to one leg and fastened the other end to a hook so the animal hung about the center of the tunnel opening in the wall. 'First,' he said, 'I'll deflect the rays in normal strength against the rabbit, simply changing their direction from vertical to horizontal . . . You see, nothing happens. Rabbits' bodies

are accustomed to the rays, just as ours are. Now I'll gradually concentrate them.'

Death By Degrees

"THE body of the rabbit began to glow as if there were a light inside it. First it was reddish and then it became violet.

"Turn off the rays,' I said a few minutes later.

"As soon as the machine was stopped I examined the rabbit. When Hartridge hung it up it had been cold from being in the refrigerator. Now it was hot. As I looked it began to swell. In ten minutes it was double its original size and there was every sign of unbelievably rapid decomposition. When I touched it, it fell to the floor, a half liquid mass of decay.

"Hartridge was staring white-faced at the unpleasant mess on the floor. He turned to me. 'You see, doctor, I wasn't imagining things,' he said."

"What did he mean by that?" asked the coroner.

"When Hartridge had me examine him that morning at Mr. Warriner's house, he believed that he was already dead."

There was a murmur of astonishment from the crowd and the coroner's jaw dropped. "Believed he was dead!" he repeated. "You mean he was crazy?"

"I have already testified that Hartridge was perfectly sane. However, I am not at all sure he was not to all intents and purposes a dead man when I examined him."

The coroner flushed angrily. "How can a man be dead when he's alive? It's absurd!"

"Perhaps I can make clear what I mean. There are certain slow-acting poisons for which there is no antidote. After a man has taken one of these poisons he is practically a dead man, though he may be a week in dying. In that sense I believe Hartridge was dead. I believe his tissues had begun to disintegrate under the effect of the rays and his body was even then slowly decomposing. That was what Hartridge himself thought and the reason he came to me for an examination."

"But you have testified that he was all right physically and only the victim of a nervous attack."

"That was what I believed at the time."

"How long had this been going on?"

"It began the night after the ray machine was stolen. That night Hartridge first noticed the vibrations when he went down into the sub-cellar."

"How long before his death was this?"

Dr. Goodrich took a slip of paper from his wallet. "I've noted down the chronology of the case, as far as I've been able to determine it. This is Monday. Hartridge died some time Friday night. It was exactly one week previously, on Friday night, that the ray machine was stolen. Hartridge felt the first effect of the vibrations on going into the laboratory Saturday night. He was not certain that he was not imagining their effect and he thought there was a possibility that he was on the verge of a nervous breakdown from overwork. Sunday and Monday night he did not notice them. Tuesday night they bored him considerably. The crisis came Wednesday night when he entered the laboratory. He had turned to lock the door as he always did, when he heard the thrumming which he had noticed both Saturday and Tuesday nights, but immensely louder."

"What was this thrumming?" asked the coroner. "You haven't mentioned it before."

"Hartridge said it was a little like the wind in telegraph wires and also like the buzzing of millions of bees. He was not sure whether it actually existed as a sound or was an effect of the disintegrating action of the rays on the body."

"He didn't see anything?"

Goodrich shook his head. "I asked him about that. He said there were no visual sensations any of the three nights."

THE coroner turned to the jury. "Dr. Goodrich is trying to tell you in his scientific way that Mr. Hartridge saw nothing."

"Thank you," said Goodrich. "I asked Hartridge to describe his sensations. The first night, he said, they were not unpleas-

ant. It was a little as if his entire body were being shaken by an extremely rapid vibrator." He turned to the jury.

"You gentlemen have doubtless seen the machines used in gymnasia and also, I believe, in beauty shops? Well, it was the sort of sensation they give that he first experienced. The second night the vibrations were so much stronger that they were decidedly painful. He said it was as if his brain and nerves and muscles were being torn apart. However, it was not until after Wednesday night's experience, the third, that he became convinced that he was either going crazy or being slowly murdered."

"What happened Wednesday night?" asked the coroner as Dr. Goodrich paused.

"Hartridge could only guess."

"What do you mean?"

"He told me," said Goodrich slowly, "that when he turned to lock the door he heard the thrumming sound, but vastly louder than it had been before. He was startled and tried to reopen the door. Before he could escape something happened to him. He said it felt as if he had been enveloped in a force that was tearing him to pieces. He couldn't move, and the agony was so great that he lost consciousness."

At this moment there was a sudden commotion in the rear of the courtroom. People got to their feet and at first we could not see what was going on. The coroner pounded with his gavel until quiet was restored. He gazed sternly at two men who had a third handcuffed between them. "Is it necessary to make arrests during an inquest?" he demanded.

"We're arresting this man for murder," said Moloney, the chief of the detective bureau. "Couldn't take a chance on him gettin' away."

"What's the case?"

"This Hartridge case you're holdin' the inquest on."

The coroner peered over his glasses at the sullen-faced man between the two detectives. "Indeed. You have some evidence you want to present?"

"Not yet. We're asking you to adjourn the inquest until day after tomorrow."

The spectators began to drift reluctantly

from the room. Moloney came over to Goodrich and me. "We've got orders to guard the machine in Hartridge's laboratory and raid the house next door where this guy Benz has been staying.

"Benz?" I repeated.

"That guy we just arrested."

"Better not do any fooling with Hartridge's machine," advised Goodrich.

"I want you two to come along with us," said Moloney.

"What do you want us for?"

"To keep us from making any fool mistakes."

The Power of the Ray

WE went first to Hartridge's house. Policemen were keeping curiosity seekers moving. Plain clothes men were scattered around watching for suspicious characters.

"It took you a long time to get started," remarked Goodrich, "but you seem to be making a thorough job of it."

"It's not only my men," said Moloney. "They musta sent every government dick in a thousand miles here. They're thicker'n flies and none of 'em knowin' what to do first, any more'n we do."

"What are you doing, by the way?"

"Just keepin' guard over that machine and seein' nobody goes in the house or the one next door."

"You haven't got any men down in the cellar where the machine is, have you?"

"Sure, and they got machine guns."

"Get them out as fast as you can!"

"Can't do that, Dr. Goodrich. We got orders to see that the machine ain't touched."

"How many men are down there?"

"Six."

"Come on," said Goodrich. He ran toward the house and we followed him. There was a little difficulty getting past the guards at the door until Moloney explained who we were.

"What about those men down in the sub-cellar?" asked Goodrich. "When did you see them last?"

"They got orders to stay down there till

they're relieved," replied one of the detectives.

Goodrich stared down the stairs leading to the laboratory. A detective was lounging there in one of Hartridge's easy chairs. "Everything all right there, Murphy?" called Moloney.

"Everything quiet here so far, Chief, except that hum you hear. Seems to come from down where the machine is."

When we listened we could hear a sound like bees in a clover field. Goodrich frowned. "I'm afraid it's too late, Moloney. All the men down there are probably dead by this time."

"You mean the machine got 'em?"

Goodrich nodded. Moloney started down the stairs, but Goodrich stopped him. "Want to die the way Hartridge did?"

"We got to do something for those poor devils penned in down there, ain't we?"

Goodrich shook his head. "There's nothing we can do as long as we hear that humming, except get killed ourselves."

* * *

We waited for half an hour after the humming stopped. Then we started down the stone stairs leading to the lower chamber. The metal door at the entrance was closed but not locked. When we opened it we saw six bodies lying on the floor where they had fallen.

"Get stretchers," ordered Goodrich, "and take them out as quickly as you can. There's nothing to keep the men who have the machine from turning it on again and getting the rest of us."

The bodies were already unrecognizable, and it was difficult to lift them to the stretchers without their falling apart. Rumors that something was wrong had spread in the neighborhood and a great crowd was pushing against the ropes the police had stretched, when the first of the bodies was carried from the house.

After the undertaker's wagons had driven off Moloney faced us, pale and grim. "You know any way of finding the gang that murdered my boys?" he demanded.

"Find anything suspicious next door?" asked Goodrich.

"Not a thing, nobody there, either. Want to go over and see for yourself?"

"I don't believe it's worth while."

"What's to prevent them guys from turning that machine on us now?"

"Nothing, if they want to."

"We got to find it," said Moloney. "How're we goin' to do it?"

"If you could make that fellow Benz talk—" suggested Goodrich.

"Think he knows anything?"

"He's the man who warned Hartridge what would happen to him if he didn't sell the machine."

"Why didn't you say so before?" roared Moloney. "We only pulled him in because he was seen coming out of the house next door. It was a bluff about holding him for the murder, because we didn't have anything to hold him on."

"I don't believe he'll talk," said Goodrich.

"Six of my men have been killed down there!"

"But he was in jail, so he didn't do it."

"We'll make him talk all the same. Where'll you be when I get back?"

"We'll hang around here awhile, in case anything turns up."

"I won't be away long," said Moloney. "You come, Murphy. I'll need you."

TWO hours passed slowly while we waited for Moloney. When he reappeared several men in uniform were with him. His face was grim. "I phoned the governor and he's ordered out the militia."

"What good is that going to do?" asked Goodrich impatiently.

"You don't know what we're up against. They're going to try to steal the big machine tonight."

"Benz talked, did he?"

"He's a tough guy all right," said Moloney half admiringly.

"How did you persuade him?"

"There was something wrong with that guy's teeth."

"What did you do, pull them out?"

Moloney looked at us reproachfully. "Nothin' crude like that. We had the dentist there and everything. He ground two

or three of 'em down with a nice rough burr."

"Helped him to talk, did it?"

"Sure. He wanted to talk when the doc started on the third tooth."

"The newspapers will get after you some time, Moloney," Goodrich warned him. "You can't get away with that sort of stuff."

Moloney flushed darkly. "I'd of cut that ——— in little pieces if he hadn't talked. Six of the boys murdered today, an' mebbe more tonight!"

"You're wasting time, if you know anything. What did he tell you?"

"I ain't wasting time. The militia will be here in an hour and a gang of laborers."

"What are you going to do, tear down the house?"

"That guy says there's an underground passage between this house and the one next door. That's how they stole the machine and that's how they're goin' to try to get the other one tonight. I'm goin' to have the militia surround the block and then set the laborers diggin'. We'll catch 'em like rats in a trap. No chance of any of 'em gettin' away."

"No? What did Benz say about the way Hartridge was killed?"

"He said they turned the ray machine on him, the one they stole."

"And that's what they did this afternoon, of course, when your six men died. Now you're going to dig them out."

"What's the matter with that?" demanded Moloney aggressively.

"Suppose they turn the ray machine on your diggers? Nothing to stop their doing it, is there?"

"We got to take a chance," said Moloney stubbornly. "We can't let 'em get that big machine."

"Did you find out where the entrance to the tunnel is?"

"Under the stairway in the sub-cellar, Benz said. Think we can rush it?"

"Don't be a fool. How far would we get before they had the machine going?"

The Great Duel

THE Hartridge house stood back about twenty-five feet from the street and we had been talking to Moloney at the front gate. He turned and looked down the street. "Here come the soldiers now. What we better do with 'em?"

"Station them around the block just as you intended and then come back here."

"What about the men I got to do the diggin'?"

"Send them away. Instruct the soldiers to warn everyone out of the houses along this side of the street. Tell them to have everybody out in fifteen minutes."

"It's pretty late," said Moloney. "A lot of 'em will be in bed."

"Get them out," Goodrich insisted. "Fifteen minutes at the outside. If they take time to dress, the chances are they'll look like those six men we carried upstairs this afternoon."

Moloney hurried away. The men in uniform who had come with him had been joined by others now. Moloney held a hasty consultation with them and then came back to where we were waiting. "Say, what's the idea anyway?" he asked. "What're you goin' to do, doc?"

"Warriner and I are going down to the sub-cellar where the big ray machine is and I shall start it going if I can. I'll try to regulate it so there won't be any danger to anyone on the surface, but I can't be sure about it, of course. I'll direct the beam at the space under the stairs."

Moloney stared at him. "That'll burn 'em up!"

"It certainly will, if they're there."

"I'll go with you," he said.

Goodrich shrugged his shoulders. "All right, if you want to. You know they may get us before we get them."

The detectives and police had been withdrawn from the house after the tragedy in the afternoon. Goodrich switched on the lights as we entered the hall. He wasted no time in the cellar laboratory, but started down the stone steps leading to the sub-cellar. The door was standing open as it had been left by the men carrying out the

bodies in the afternoon. The electric lights had not been turned off.

The ray machine stood on its revolving platform with its projector facing the tunnel it had carved out of the earth. The three of us stood on the bottom step gazing into the low room which might easily become our tomb in the next five minutes.

"Keep close behind me," said Goodrich in a tense whisper. "Don't take any chances. Now!"

He ran across the cellar to the machine. "Take hold of the platform," he said. "We've got to turn it." A second later the machine was pointed toward the stairs.

He leaped on the platform and pulled two or three levers. Immediately the machine was surrounded by a violet glow as the incandescent column from the projector cut its way through the stone stairs and the earth beyond. We could see down a long vista of disintegrating matter, but there was no sign of an underground passage or chamber.

The large ray machine was noiseless. Now as we watched its incandescent column penetrating into the bowels of the earth we heard the dreaded thrumming sound. We both realized at the same instant what was happening. Our machine was not directed at the right spot. The men we were after had started their machine. They knew exactly where we were. We probably had only a few seconds to live.

"Quick!" shouted Goodrich, jumping from the platform. "Help me turn it again."

AS the thrumming grew louder we swung the projector around to the other side of the stone stairway.

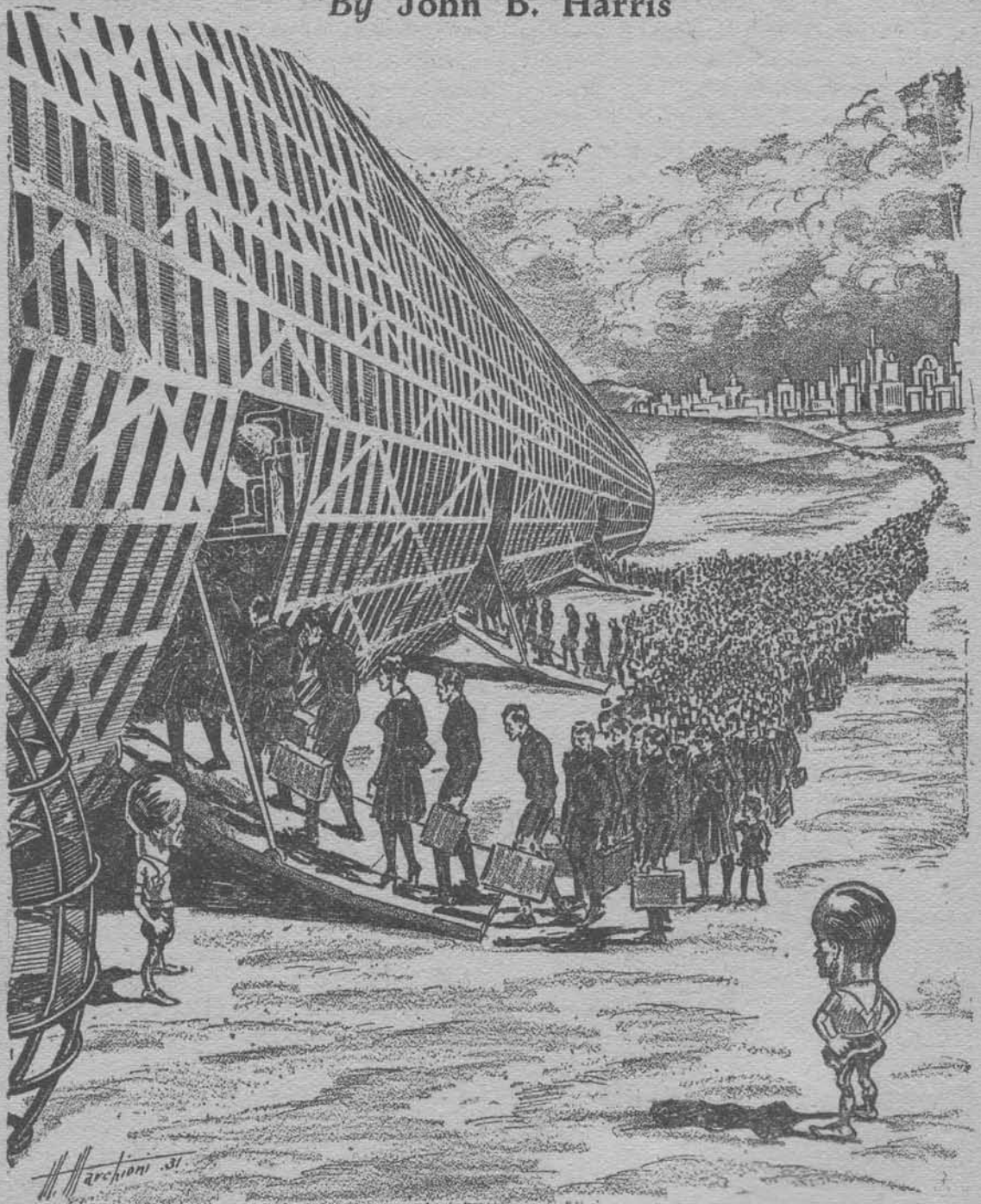
Something happened at this instant which I am unable adequately to describe. Goodrich and Moloney confess themselves equally helpless. I remember seeing the incandescence cut a path for itself as we turned the platform. The effect was a little like that of directing a blow torch at a snow bank. When it reached the other side of the stairway the thing happened.

Goodrich's explanation of it sounds reasonable to me. We had finally struck the

(Concluded on Page 1470)

Worlds To Barter

By John B. Harris



(Illustrated by Marchioni)

Lines of haggard men and women were struggling toward a transporter . . . those feared and despised machines which had become symbols of rescue.

OUTSIDE the tall laboratory windows the sun shone brightly on the gardens. It was that kind of June morning when one forgets the deficiencies of our civilization and everything seems for the best in the best of all possible worlds. Certainly in the minds of Professor Lestrangle and myself there was no suspicion of any untoward occurrence. We had already been working for some three and a half severely practical hours.

Lestrangle, in that year 1935, was not unlike the photographs, taken ten years later, which now adorn the physics textbooks. Already, at forty, his most striking characteristics were that broad white forehead where so many mysteries were solved and those piercing eyes which saw so much that was hidden from ordinary men. Already his adaptations and improvements marked him for success though he had made none of those revolutionary discoveries individual enough to be understood and acclaimed by the public.

The time was yet to come when the name of Lestrangle would be more familiar than that of Edison had ever been and when his commanding face would peer out from a million printed pages.

The critical moments of our present experiment were approaching. I was attempting to fight down my rising excitement so that no trembling might show in my hands. Lestrangle was, to all appearances, as calm as a frozen sea. During his work he preserved the mien of a poker

player. Not a hurried movement betrayed any anxiety as in the silence of the long laboratory he tested the last connections and inspected the final adjustments.

"Stand by," he ordered, at length, in an unemotional voice.

As I moved aside, his hand was on the switch. My eyes were fixed upon the intricate apparatus before us. In a few seconds now, the throw of a copper bar would prove whether we faced a marvellous discovery or the symbol of wasted months of labor.

There was a mighty crash behind us. That noise, so dreaded in our surroundings, hit my taut nerves like a hundred volts. I whirled round. Lestrangle's scientific abstraction was shattered. Slowly his hand left the switch and his mouth dropped open. At any other time the way blank amazement succeeded intelligent concentration might have amused me, but, now, I myself, was too bewildered.

Two thirds of the way up the room, in the middle of what had been a clear floor space, lay a piece of machinery. A few

feet from it sprawled the figure of a man. As we stared, the man sat up. He was dressed in a close-fitting black suit of a texture and finish resembling leather and apparently made in one piece. His build was tall and strong and his face, though it bore an expression of confusion at the moment, showed firmness of character.

ONE of the fascinations of the time traveling story lies in the endless source of speculation concerning its manifold possibilities. So many elements of time traveling stories seem to be contrary to reason and lead the thinking reader into all sort of absurd situations. Some of these were pictured quite vividly in our readers' column by young Mr. Nicholson last month.

Readers may find some of these apparent contradictions in the present story. Even the scientists of the 22nd century found themselves unable to follow the mysterious program of the owners of the silver vehicles who wanted to transfer a whole race through time.

But this story is thrilling from beginning to end. It leaves one with a sense that there was much that our hero could have told us, if he were able. It leaves us with a haunting sense of mystery, of unnamable fear and of desolation.

For a few seconds he gazed about wonderingly, then alarm seized him. His voice was urgent as he addressed us.

"Quick," he said. "Some string. Quick."

Something in his manner caused me to search my pockets without question.

"Here," I said, holding out a length of packing twine.

He snatched it and turned to the machine behind him. Hurriedly he raised the contraption from its side to a vertical position. More than anything else it seemed to resemble the skeleton framework of a miniature building using, instead of steel, bright silvery bars which crisscrossed in all directions. Enmeshed in them was a bucket seat before which were arrayed two rows of dials. There was no time for a further examination.

The stranger leaned over the instrument board, adjusted several dials, tied a loop in the end of my bit of string and slipped it over a small lever. He took as many steps away as the length of the string permitted and gave a jerky pull. . . .

THERE was no machine; before our startled eyes stood only the stranger, the string dangling from his hand. A sigh of relief broke from his lips as he turned towards us.

"Gentlemen," he said, "I owe you an apology."

"You do, sir," replied Lestrangle. "I should be pleased to know by what right you intrude."

"I admit, I have no right. I can plead only what they used to call in the old days, sanctuary. You are Mr. Lestrangle—the inventor of the battery? My own name is Lestrangle—Jon Lestrangle."

"My name is Lestrangle," the Professor admitted, "but I have invented no battery."

"Not yet?" said the stranger. "I am earlier than I thought. You must excuse me, my dates were never good."

There was puzzlement on Lestrangle's face as he replied.

"I do not understand you. No doubt you will explain later. Meanwhile, am I to infer from your name that you claim relationship?"

"Certainly we are related, but—er—distantly."

"The matter must be examined. I cannot pretend ever to have heard of you before. Let me present my assistant, Henry Wright."

The stranger held out his hand.

"I've heard of you, Mr. Wright," he said with a smile. "Your rescue of Mr. Lestrangle was an act of real bravery."

It was my turn to be puzzled. In all the six years I had known Lestrangle he had never been in more danger than anyone who crosses a busy street.

"I see I have made another blunder. Please forgive me," the man apologized.

A change came over his expression. The smile of greeting gave way to a look of anguish. His

eyes seemed to plead as he asked:

"Tell me, have you ever, either of you seen or heard of another machine like the one I came on?"

We shook our heads. I could recall no invention bearing any resemblance to it.

"There was really no chance, not one in a hundred million," he said slowly. "I knew it wasn't possible, but I had to ask."

His gaze wandered round the room pausing here and there upon apparatus until it came to rest upon the material of our thwarted experiment. His eyes brightened and he took a few steps towards it.

Lestrangle and I were recovering now from our sense of unreality. Our eyes met



JOHN B. HARRIS

and we knew that the same thought was in both our minds. All mystery was ripped from the affair with a jerk—the man was a spy, with the minutest care he was examining the product of our secret months of labor. Lestrangle pulled a revolver from a drawer.

"Put your hands up," he snapped. The other obeyed, a slight smile on his lips.

"I've heard that these were troublous times," he remarked.

"Come over here," Lestrangle ordered, "and tell us just why you are so interested in that experiment."

The other, who called himself Lestrangle, opened his eyes wide in evident surprise.

"Surely," he expostulated, "it is reasonable to show interest in the discovery which changed the face of the world? Besides, I may be mistaken, but it seems slightly different from what I remember. It's a couple of years since I saw a picture of it, but I have a distinct impression that several of the connections ran differently . . . that terminal on the left should be coupled direct to . . ."

"What on earth are you talking about?" roared Lestrangle. "You must be mad. The thing's only been assembled four days."

"Oh, Lord," said the stranger, "I've put my foot in it again. I'll have to try to explain it all to you, but it's a long story. May I have some food first—I haven't eaten for twenty four hours."

CHAPTER II

The Man From the Future

BY the end of the meal the visitor's status had changed. He was no longer an interloper, but a guest whom we were calling, at his own request, Jon. Somehow in that desultory form of conversation appropriate to the lunch table, we had lost our suspicions though we were no nearer to understanding him. He was curiously ignorant at the same time that he was well informed. His broad outlines of current politics were good, but of the details he seemed to know nothing.

In speaking of well known characters he

appeared to hesitate as though he might commit himself. His knowledge of literature was excellent though occasionally he referred to works of which I had never heard, by authors whose fame was world wide. My condensed impression was that while he appreciated the high lights of most matters, he was sure of himself only in a few subjects.

"You'll smoke?" inquired Lestrangle as we retired to his comfortable study.

"Tobacco?" asked Jon.

"Of course," replied the Professor with a touch of surprise. "What else?"

"There are many things to smoke where I come from—one has to be careful."

He settled himself comfortably in a big chair and lit a cigar.

"Now," he said, "if you can put up with a long tale, I would like to explain this intrusion."

"Our experiment . . . " I began.

"Would not be a success in its present form. Believe me, I can tell you where there is a miscalculation."

I accepted his statement. He seemed to know something of our work. Lestrangle, too, nodded agreement.

Jon began:

"I think the first thing to be explained is why I chose to thrust my company upon you rather than upon any one else. Perhaps the first reason is our relationship and the second that my studies have informed me that you, Professor, have probably a more open mind and a greater grasp of possibilities than any man now living . . ."

"This relationship . . . ?"

"Our family has been proud of its direct descent from you and your wife, Joy."

Lestrangle and I looked at one another. Now there was no doubt that the man was off the rails somewhere.

"But I'm not married, I . . ."

"Please let me go my own way. It is a difficult situation, but I hope I shall convince you. Very few men can have had the chance of convincing their great-great-great grandfathers of anything. I am now an anachronism. You see, I was born in the year A.D. 2108,—or should it be, I shall be born in 2108?—and I am—or will be—

a refugee from the twenty-second century. I assure you that you will be married shortly, but I can't remember when—I think I told you I was bad at dates.

"It will probably be easier for you if I tell the story in the past tense. Certainly it is a past life for me. You saw me burn my bridges when I tied the string to that machine.

"**O**F the nature of time, we of the twenty-second century knew little more than you of the twentieth. Habit of thought still caused us still to think of it in terms of progression along a straight line. Though we were aware, of course, that this was inaccurate, yet for all practical purposes it served us as well as it had served the world for thousands of years before.

"Because I am here now, I know that time is somehow folded or circular so that it is all co-existent, or non-existent. But of the working principle of that machine which brought me here, I am as ignorant as you. I set the dials, pulled the lever—and there was your laboratory.

"I daren't keep the thing to examine it. It's even betting that the owners had some way of tracing it and that was not a risk worth taking.

"The world I was living in was not all you twentieth century men expected. It would have disappointed Wells and his fellow prophets to have had a true vision of A. D. 2135. We were on another swing of the pendulum.

"Scientific progress in the sense of physics, chemistry and engineering had slowed its advance to a minimum while the world caught up and readjusted. By the end of the twentieth century science was so far advanced that civilization was becoming seriously lopsided so that nature tended to restore the balance. Even today I expect you can begin to see how large scale production has begun to upset politics and social conditions which were designed to cope with a simpler way of life. It is making war no longer the solution of difficulties, it is uprooting the old order of things, but not reorganizing.

"So you will see that I come from a world in which Mr. Wells' 'Sleeper' might awake, but from an age which had spent the previous century in improving its institutions rather than its machines.

"Since the year 2000 the Lestrangle battery, of which you heard me speak, had been almost the only driving agent for machinery. In 2000, Mr. Lestrangle, the internal combustion engine will have passed away. The whole world's trains, ships, planes, radios, cranes, everything save the most ponderous machines will be depending upon your discovery.

"It is strange to tell a man of his results before the experiment has been made. Nevertheless, I assure you that your little storage battery is going to have a greater effect upon the whole world than any other single invention in the history of mankind. Even the machine which brought me here depended upon a modified form of your battery to carry it across half a million years."

"But you said—"

"Oh, yes, I have taken only a little local trip on it. A mere jaunt of a couple of centuries."

The Coming of the Menace

"**L**OOKING back, I can see that the first sign of the crisis we were to face occurred about a year ago—to me—in the summer of 2134. An account was published by newspapers and radio of the derauling of a train. (It was still more economical for heavy, imperishable goods to be carried by rail.) An investigation of the accident, so far from clearing up the reason, had obscured it.

"Among the debris was found the crooked frame of what we later learned to call a 'time traveller'. Attention was first attracted to the silvery bars by their strength. Though the joints of the structure had been strained by the impact, rods, a quarter of an inch thick, were found to be supporting tons of wreckage without a bend. This unknown, silvery metal itself set a problem, but a greater puzzle was the body found lying near the track.

"There could be no doubt that the corpse

was human, though to us whose standards were still those of ancient Greece, the thing appeared a travesty.

"In height it must have stood about five feet. The head had twice the volume of ours though the enlargement was mainly frontal. The neck was thickened in order to support the weight until the shoulders barely projected. Puny arms ended in small hands of which no finger carried a nail and none was longer than two inches.

"Each foot was just a pad showing no articulation of the toes. When the dissectors got to work on the body, they noticed many other curious malformations such as abbreviated intestines, atrophied aural system and absence of teeth.

"Speculation ran rife. Everyone made the creature's origin a sort of guessing game. It was suggested that the thing was a natural freak, a product of vivisectional experiment, a sensational hoax, an attempt at artificial creation and a dozen other things all equally wide of the mark.

"The only explanation which attempted to account for the machine was offered by an ingenious gentleman who claimed that the body was that of an interplanetary explorer who had selected a singularly unfortunate spot for his landing. It was curtly pointed out that a metal framework is not the best protection against a vacuum. It nevertheless transpired later that the only thing seriously wrong about this explanation was the inclusion of the word 'interplanetary'.

"As the controversy began to cool, it suddenly received fresh fuel from the finding of a similar body in a coastal rock-pool. The boy who reported it said that there had been a shiny machine near, but when he touched a lever, it had disappeared. Again the crop of surmise sprouted. Every suggestion which could be made, was made; save the right one—that the people of 2134 had gazed on the bodies of their own remote descendants. Could we have read in the mystery the warning it carried, it would have been useless to us.

"Three months ago, the curtain rose on the last act of our drama—only three months."

JON paused and looked at us with bitterness in his eyes.

"Then," he said, "it was a happy world. A civilization progressing serenely, as it thought, to its appointed goal. Now it is swept away. All time and space are warped, distorted and incomprehensible.

"It was my happiest night. A dream had started its flow towards reality—now Fate has ordained that the dream remains a dream. Somewhere in the intricate tissue of time, Mary may still live, but the dream can never be fulfilled now.

"Across that evening, which surely was made for lovers to discuss their future, clashed the voice of our doom. Over the whole broadcast belt in all the world those unemotional tones were heard.

"'People of the Twenty-Second Century,' the voice began. 'We of the five thousand and twenty-second century offer peace. We come from a period in the world's history which holds no hope for us. We have conquered time that we may gain the Earth. We offer two kinds of peace, one is elimination, the other, submission to our will.'

"'We are not cruel. We do not wish to kill you, our ancestors. Instead, we give transportation—you will exchange your world for ours. We will carry you across the gulf of half a million years to a world in which you, a short-lived race, will be well suited as will your sons and your sons' sons. For us who count our years by thousands as you count by tens, the end is too near. We have broken through time that we may continue our work. Prepare yourselves and your possessions that you may be ready for the time and places we shall appoint.'

"Neither Mary nor I knew what to make of it—indeed, we heard it only subconsciously. Tomorrow would explain. Tonight we had more important matters to discuss.

"The next day did not explain; it complicated. Where did the voice originate? How had it compassed all wave lengths? How was it of equal strength at antipodes? Why did no picture of the speaker come through on the television screens? It caused a vague uneasiness. Though no one understood nor took much interest in the

message itself, the curious form of transmission was disturbing to a world unused to new inventions.

"The general attitude to science had resulted in the feeling that things were very well as they stood and that tamperers should be put down with a firm hand. Even the type who immediately attributes the incomprehensible to a form of practical joke felt that easy solution to be inadequate. The mass of the people wondered unintelligently, suggesting hazily that 'something ought to be done about it. Governments officially disregarded it and privately did not know what to make of it.

"A FEW days later, came the second world wide call. Mary and I were sitting at the open window when the voice made us jump round.

"'But I shut the radio off,' said Mary in surprise.

"I crossed the room and inspected the switches. Undoubtedly they were out—there might be a short somewhere. I pulled the leads from the speaker and then stared at the thing in amazement, for the voice still continued:

"—seems in view of the fact that no preparations have been made, that you have not understood our intentions.'

"It was uncanny. I picked up the speaker and carried it across the room. I know a few tricks to make an unattached speaker work, but none of them was being used here. The voice went on:

"—not our wish to hurt anyone, but such as do not accede to our demands must be eliminated. It is suggested that for the purpose of convincing yourselves that this is no empty threat, a committee shall be appointed to visit us and report its findings to the world. Thus you shall be convinced that obedience to our will is the only course not leading to elimination. This committee will gather at the Paris Air Station whence we will provide a means of travel one week from today at exactly this hour.'

"I looked at Mary and she at me. There was trouble in our eyes. There was something behind that unemotional voice which told us that this affair was far from a prac-

tical joke. Feeling, not reason, told us it was serious.

"'I am going on that committee,' I said at last. 'Somehow or other I'll join it and find out what's at the bottom of all this.'

"Mary nodded.

"'Good, Jon, that's like you,' she approved. Then a little frown appeared.

"'You don't think it's dangerous?'

"'Not a bit,' I assured her. 'There'd be no point in assembling a committee just to kill its members—or 'eliminate' them, as the voice puts it. They might just as well start 'eliminating' right away. No, I think whoever they are, they're on the square and though the whole show sounds insane, there's something pretty big behind it.'

CHAPTER III

A Mysterious Adventure

"FAR below we had seen the coast of France slip away from beneath our queer craft. Now, through the thick glass windows, the blue waves of the Mediterranean twinkled at us. Around me, as I gazed down, buzzed the tentative suggestion of a puzzled committee.

"Such influence as I possessed had been exerted with successful results. A large air liner had carried me rapidly from home to drop our gliding tender at Le Bourget, the Paris airport. There I had found a group awaiting the craft promised by the radio voice. It was a cosmopolitan collection of Americans, Germans, English, French, Japanese, Chinese, Indian and most other nationalities.

"Not one of them officially represented his government. The rulers assumed an ignorance of the ultimatum, nevertheless they had assisted brilliant men to attend. The unknown had managed to infuse into his short speeches some quality which attracted many intellectuals.

"I had left myself a narrow margin, for, within an hour of my arrival our craft was sighted. At a great height the watchers saw a silver cylinder hurling itself towards us. At that moment, I believe, some began

to realize the possibility of a menace. All eyes gazed up.

"Only random guesses as to its size could be made at such a distance, but as it drew nearer we judged it to be about equal to one of our larger airships. Built of silvery metal, it tapered at each end. Along the sides there ran rows of windows. Nothing more was to be seen, it gave no clue to the manner of its propulsion.

"Suddenly from all the loudspeakers both in the control tower and around the ground snapped the one word:

"'Landing.'

"The ground crew used for the lighter-than-air machines hurriedly assembled and then found that there was nothing for them to do. Down and down the great cylinder dropped to land as lightly as a leaf.

"'The committee will come aboard,' said the voice we were beginning to know so well.

"Simultaneously sections of the hull opened outwards, the hinges at the bottom so that the doors themselves formed ramps.

"For a moment we looked at one another in hesitation, then we stepped forward as though by common consent. There was no one to welcome us on board. Into a great saloon—seemingly the full length of the ship—we flocked. With a click the doors closed and we were off to heaven knew where. Thousands of feet above the ordinary traffic levels we turned and sped to the south.

"After the first surprise of departure had worn off, we found our tongues again. It seemed as though most of us found them at the same moment.

"'I do not like this affair, not at all, no,' said a little Frenchman whom I recognized as M. Duvain of the French Air Roads.

"'It is all too mysterious. Are we children that they make to us the effect of the stage thrill? It is a bad begin, such nonsense, for the serious investigation, no?'

"'Damn ridiculous, the whole thing,' replied Sir Henry Deen, standing near. 'Silly scare by some jokers in my opinion. However, they're in for it now, we'll soon show 'em what's what.'

"The Frenchman nodded his agreement.

"'And you, m'sieur,' he said turning to me. 'Do you not think it is as an insult to treat a so distinguished party as a flock of the sheep? No reception, no speeches.'

"'If it is a practical joke,' I suggested, 'you don't want to be made more of a fool, do you?'

"'Then you, too, think that it may be a practical joke?' asked Sir Henry.

"I informed him that I had come to observe and to draw conclusions from those observations. I had no intention of muddling myself by prejudice nor of building theories without foundation. Not a polite answer, but the pair irritated me.

"'The desert,' shouted someone. I turned back to the window and saw that we were heading over miles of rolling sands towards the heart of the Sahara.

"THREE quarters of an hour later, the familiar voice gave its laconic 'Landing'.

"Below us lay a building. It was shorter than the craft we were in, some three hundred feet by one hundred and fifty and rising about sixty. The whole place was entirely constructed of the silvery metal.

"The ship settled without a jar. The doors fell open and we walked out to find ourselves face to face with a seamless, shining wall in which one patch of darkness framed a waiting figure.

"Exclamations of surprise rose from the party. There can hardly have been one of us who did not realize in that moment that we now faced a living replica of those two bodies which had puzzled the medical world. The same massive neck supported the same front-heavy head from which two intelligent eyes examined us. For clothing he wore nothing but a brown, shapeless tunic and a pair of soft boots. As we stared, a voice commanded us to follow, but the dwarf's lips showed no movement.

"We passed into a large hall lit by some sourceless diffused radiance. In rows of chairs we seated ourselves as if for a lecture. The five-foot figure took a chair in front of us. It was curious that in facing the man I felt none of the distaste one has for an abnormality. It became forgotten!

that by our standards he was stunted, malformed, hairless, toothless and deaf. He was of another race—no more abnormal than a pigmy or a Tibetan. He addressed us, but still no movement broke his lips.

"'People of the Twenty-Second Century,' he formally began, 'you are evidently less advanced than we had anticipated. So far, it would appear that you do not accept our offer of transportation, but neither do you reject it—you completely fail to understand it. You must therefore be treated like children to some simple demonstrations of our power. First, you shall see the world we offer.'

"Upon the wall behind him a scene 'faded in'. Not like a picture, but rather as if we gazed at a real if fantastic countryside. A level plain stretched away to the distant mountains. In the foreground stood buildings; a city of gleaming metal, each structure beautiful in line and proportion, but none rising higher than two or three floors.

"'The town of Cyp,' said the voice. 'It stands on the bottom of the old Mediterranean Sea close by Mount Cyprus. You will notice that it is low built. This is necessary as the air at such high altitudes is rarefied. On the Atlantic or Pacific beds'—here the scene changed—the towns are loftier since the atmosphere remains dense at such depths. Though the oceans have dried, it is no barren world. The great deeps still contain enough water and will do so for some hundreds of years. After that is gone, there are the machines.'

"A gloomy looking tarn flashed before us. Deep in its darkness was a reflected glimmer of the red ball of fire above.

"'The sun is getting old,' said the voice. 'Slowly he is dying as he must, but there is a long time yet before his end.'

A Confusion of Time

"VIEW began to chase view rapidly across the screen. The voice went on:

"'All this is what we offer in exchange for your world. Buildings which will still be standing proudly when the Earth has become cosmic rubbish as the moon. Mach-

ines to make food, supplement air, create warmth and produce water, all are waiting for you. Machines which are proof against wear; proof against breakdown; wheels which will go on turning when the untenanted world snuffs out the last smouldering fragment of her fiery life.

"'Though much of it will defy your minds, you will have all the accumulation of wisdom and invention that the wit of man has produced since he began—all save one thing—the secret of time, that is our safeguard which even we must use with care lest order become chaos.'

"Still the scenes flashed and faded before us. Mighty machines, beautiful cities, intricate flowers, limitless plains, vast halls, huge flying cylinders, a panorama of a world shown to us half a million years before it should exist.

"Most of us were dazed, but we did not doubt. Conviction that this was the truth came not entirely from the voice, nor yet entirely from the pictures, but from some power which seemed to accompany both. In the presence of the dwarf the fantastic ceased to be fantastic and any thought of bluff had long been banished. The case was stated with plain force. He had made us feel that the plan was as feasible as for two nations to change territories—as feasible and as inconceivable.

"That our population could, if it chose, move half a million years, we had no doubt; But that it would not so choose, we were certain. If the invaders thought that they had but to say the word and we would relinquish our healthy middle-aged world for one tottering on the brink of senility, they could not know much of our stubbornness.

"The tall Professor Toone of Harvard rose from his seat.

"'On behalf of all of us, I should like to know the reason for this plan,' he said. 'You appear to offer us much—what do you gain that we lose?'

"'You lose,' came the reply, 'nothing but familiar surroundings—we offer better surroundings.'

"'But,' objected someone, 'what about our children? Several generations are safe,

you say, but you condemn the rest to extinction?'

"Some, but not all. You ensure for the others an infinite future (if you understand such a term)—that is the object of the plan."

"But—"

"Do you not yet realize that we are your descendants—the descendants of your children? We are the race your stock has bred and, though we have climbed far, the end is too near for us. Were we to stay in our age we should die when the earth died. Instead we shall take the more youthful earth, for our need is the greater. From it we shall climb to infinity as life climbed from the sea to the land. Thus will we, your children, approach the closer to our destiny. It was not meant that life should cease with the earth—evolution was delayed. Do you understand?"

"Hanged if I do," murmured the man next to me. 'What's he getting at? Is it religion?'

"I did not answer him. I was trying to understand. The speech had been far longer than the repetition I have given you. Much of it I still cannot grasp. The vista was too big, the muddle of time too involved, but I thought I had the main drift. The next speaker almost voiced one of the questions which troubled me though his manner was facetious. He was an Englishman whose voice sounded tired as he asked:

"Am I to understand that though we are at present your ancestors, you are shortly likely to become your own ancestors?"

"Yes," said the voice, 'and no.'

"THE Englishman looked helpless round.

"I give it up," he announced in tones even more tired than before.

"You cannot understand that until you know the nature of time," was the reply. 'While you continue to imagine time in terms of progression, you put more stumbling blocks before you than did ever the flat-earth theorists.'

"Professor Toone arose again to put a question. I cannot remember what it was for at that point the discussion started to

leave me behind. Voices went on wriggling into an abstruseness beyond my mental grasp. It was a kind of knock out contest—the survival of the mentally fittest. When Sir Henry Deen rose to his feet a long time later there can only have been two or three of the company who retained any pretensions to following the slender thread of explanation. He broke the spell.

"Can we be shown something of your works, something concrete upon which we can report? So far we have done nothing which will profit either you or those who sent us. The public we represent will scarcely be impressed by hearing merely of a philosophical discussion which most of us have failed to follow. Any intimation we could give them of the forms of armament upon which you rely to carry out this plan would be vastly more impressive than an unlimited amount of discussion."

"You shall look around our building, though there is little to see. In the matter of armament, we must disappoint you."

"Sir Henry grunted.

"Intending to keep that secret, eh? Very sensible too, from your point of view, but if you could give a demonstration of your weapons' power. . . ."

"You mistake us," the voice reproved. 'We cannot show armament because we have none.'

"Ha. Then the whole thing is a piece of humbug—a bluff. I had suspected so from the beginning. You think that by tricks. . . ."

"Again you do not understand. Why should we have any need of those guns and shells which are, after all, merely the extension of the stone-age man's sling and throwing flint? Intellect has no use for such uncertain toys—shells which may kill one man or one hundred men. We wish to kill no one."

"Sir Henry snorted again to show his contempt for such an attitude (or perhaps to be on the safe side in the event of this proving itself an extension of the bluff).

"There was a pause during which several more dwarfs entered and approached our instructor in a manner which revealed them as inferiors. It was explained that we

should be shown round the building in parties.

"It's a queer thing," said my neighbour as we rose, 'but did you notice that the old boy never opened his mouth all the while he talked to us—nor has this one.' He nodded towards the back of our guide.

"Also, we know they can't hear, yet they understand everything we say. Rum, I call it, just you watch this fellow now."

"The dwarf strode straight at the metal wall and a space appeared before him.

"Nothing queer about that," I said. 'I know plenty of doors at home which open when you tread on the mat.'

"No, it's not that. You watch next time. That bit of wall neither swung back nor slid—it just disappeared. Same thing happened when we first came in."

CHAPTER IV

A Battle of Wills

"THE guide was frankly contemptuous. His was the manner of a major-domo taking the lap-dog for a walk. He threw out occasional curt references to the objects we passed. These machines were water producers, those, food makers. One and all were equally mysterious to most of us. We trailed blankly along gaping as vacantly as any savage at his first radio. Perhaps the dwarf was justified in his contempt, for these machines, unlike the 'travellers', did not use Lestrangle batteries and the source of power was to us as obscure as the methods of operation were unintelligible.

"At length we reached a large hall which at first glance seemed to be a jumble of birdcages.

"Travelling machines," came abruptly from the guide.

"We approached them and he became so informative over what we guessed to be a recent invention that contempt was momentarily forgotten. One of the two rows of dials, he explained, determined the amount of time to be traveled. It contained seven indicators ranging from an hour to ten thousand years. The lower row regulated the position.

"A certain amount of interaction between the two rows was necessary. For one thing, it prevented the machine from maintaining its position in space without reference to the motion of the earth. Within the limits set by this interaction, position could be calculated almost to a foot.

"What's that for?" asked one of the party reaching towards a lever. As he lifted his hand, the dwarf saw him and he reeled back, crashing to the floor. Afterwards, he told us that it had felt like a tremendous blow between the eyes.

"What did I tell you?" said my neighbour excitedly. 'Force of mind, that's what these people use; that's why their hands are vestigial. Pure will power.'

"The dwarf seemed to hear him for he looked towards us.

"I am surprised," he sneered, 'that you even know of such a thing as will power. I judged by your reflexes that you had only instincts.'

"You are insulting," said a voice behind me.

"There are thirty of you," he continued to sneer. 'Let us see if your combined wills assist you against mine.'

"We stared around us in amazement. The walls had gone, the machines, too, everything. There was nothing to be seen in any direction save unbroken desert.

"Playin' Aladdin's lamp tricks," growled my neighbour, bending down to grasp a handful of sand.

"The dwarf almost smiled at our confusion.

"You know perfectly well where you are," he said. 'But all you can see or feel is the open desert. That's how much all your wills are worth against mine. Try now to see whether you can bring the walls round you again.'

"I suspect that it was the mind of that remarkable man, Professor Toone, which tipped the scales in our favour.

"For a moment we felt the heat still beating up from the sand, then the shadowy outlines of the hall began to reform. Slowly from mistiness they grew more substantial, for a few seconds they began to fade again, then, in a flash, we were back in-

doors. The dwarf lay on the floor before us, panting.

"'Lord,' said someone, 'played out like he's run ten miles—anyway, we've got some wills between us.'

"WHEN I had been home three days I began to understand Professor Toone's decision that the committee should meet and discuss in Paris before scattering to report.

"He made the suggestion during the flight back to Le Bourget. The alacrity of acceptance was such as to make one suspect that the delegates were so uncertain of what their reports should contain that they were eager for a few pointers. Toone by common consent opened the proceedings.

"'Gentlemen,' he began, 'each of us will be called upon in a few days to give his comments upon the results of our investigation.

"'The questions we shall be asked will appear ridiculous in the light of our experience, but, they will not seem so ridiculous to us as will our answers to our governments. They will say: 'What form of power supported and propelled the flyer you traveled in?' We shall reply that we have no idea. They will be irritated.

"'They will ask: 'How many of these dwarfs are there?' We shall have to reply that we saw at most about fifty. They will smile. This will be followed up with: 'What kind of armament?'—We saw none and have reason to believe that they possess none. 'How many flyers?'—We saw only one. 'What is their silvery metal?'—We do not know.

"'So it will go on until with their amusement and their contempt we shall be in danger of becoming a laughing stock. If that is allowed to occur, we have no hope of any warning we may give being regarded as anything but further embroidery to a great joke.

"'Seldom, gentlemen, can any committee of investigation have produced less concrete results. Had we found great guns, strange rays, new gases, they would have listened to us—instead, we have found a menace of

pure force beside which such weapons would be childish.

"'We have found this, I say, but because we cannot comprehend it, we cannot describe it. The grand total of our observation is one strange ship, one equally strange building, a few dwarfs, a number of machines reputed to be time travellers, other unknown machinery and what our critics will call a cinematograph show—that is all we saw: we cannot tell them what we felt.

"'This, then, is the problem confronting us: How can we convey to a skeptical world the sensation we received of potential force?

"'The peoples must know of that seething mental battery, that surging power of will beside which we are scarcely reasoning creatures—they must know, and they must believe. The burden of their conviction lies upon us.'

Fruitless Efforts

"THE conference had continued for two days. Two wasted days they seemed to me. Speeches drifted more and more from the main issue and steadily tended to confine themselves to suggestions for combating the menace. Again and again Professor Toone dragged the members back from their talk of tactics by his insistence that the governments must first be convinced of the need for tactics. No solution could be suggested short of the governments themselves experiencing our sensations.

"Back home, I was sitting in a palatial office trying to convince a bored official who felt that his time was being wasted.

"I was growing irritated.

"'Can't you think,' I demanded, 'in any terms but guns and gases?'

"'They might have ignition rays,' he assented.

"I groaned.

"'Of course they might have, but can't you see what I'm getting at? They simply haven't been developing along those physical lines.'

"'They seem to have developed physically a great deal if your description is accurate.'

"'Their present form was probably

reached tens of thousands of years ago—to them, that is. It's their minds which have progressed since then—if only you could meet them, you'd begin to feel that terrifying force. Man alive, it was as much as thirty of us, most of them brilliant men, could do to overthrow the mental suggestion of one of their inferior servants.'

"The official smiled.

"'And their flyer. Do you realize that there was no one save the committee on board—no pilot, no crew? The whole blasted thing was worked by a telepathic control of some kind.'

"'We also have radio control,' he reminded me gently.

"I began to admit to myself what I had known from the first—that it was hopeless. But still I hammered on.

"'You don't realize what they are working for. We speculate mildly about the future of mind—they *know* its future. They are out for discarnate intelligence. They know that, given time, they can achieve it.'

"'Nonsense, there can't be a mind without a brain.'

"'Why not? The brain is only the organ of the mind, a sort of central control for the other organs. Already they can project their minds, but they still have to use the body for a base for operations.'

"'You seriously expect me to believe that?'

"'There's proof of it. Did you hear the voice which issued their ultimatum?'

"'Yes.'

"'And it came from the loudspeaker?'

"'Yes.'

"'Then perhaps it will surprise you to know that in London they took a record of one of the messages. When they put it on the machine, not a sound was to be heard—the thing was blank. Those messages never came out of the loudspeaker, but the dwarfs, for some reason of their own, made you think—made us all think that they did.'

66 **I**N the evening when I met Mary, I was tired and discouraged. Nothing I had been able to say had even dented that wall of mechanical materialism. My most trenchant arguments had either bounced off or

missed fire. The final blow had been when, in the middle of my efforts to convey my impressions of mental strength, he had asked with the air of one who draws the conversation back to realities, whether I thought that they might have tanks hidden in the neighbourhood.

"'It isn't,' I said to Mary, 'for or against acceptance of the dwarfs' terms,—as for that, I only know that I, personally, am going to no dying world,—my job was to try to make the fools realize that they really were terms. For two and a half hours I tried to tell that smug know-all that an over-whelming danger threatens him, the nation, and the whole world—I made just as much impression as I would throwing snow-balls at a pyramid.'

"Mary gazed at me intently.

"'It's very difficult to grasp,' she said. 'Even yet I don't really understand what this great danger is if they haven't got any weapons.'

"'That's the devil of it. They may even have some weapons in the way you mean—though I don't think so,—but that is nothing to do with their strength. Oh, if I could only convey that sensation which scared us all, something might be possible, but I'm utterly incompetent. If you asked a horse to explain the activities of men, he'd be no more at sea than I am over this business.'

"'But, dear, if there are so few of them, why should they want the whole world? Surely they could make a sort of colony somewhere?'

"'I don't know, but I think this is a sort of advance guard—supervisors of emigration and immigration; we don't even know how many of them there are. Probably the world couldn't support both populations at once so that the only way is a complete change over. Half the worry about this affair is that we know nothing of the details—we're just expected to do as we're told.'

"Mary bent towards me and tried to smooth out the furrows of anxiety.

"'Darling,' she said firmly, 'you must stop worrying about it. Put it all away for the present.'

"She took my arm and we strolled out to the terrace. A soft breeze pressed the

trees so that they swayed gently. Slips of torn cloud were gliding across the moon. Far, far away we could see the misty outline of the hills.

"'It's all so beautiful,' she whispered, her eyes on the dim distance. 'I think it makes me afraid.'

"My arm went round her.

"'Our lovely world,' said my voice.

"'But how long ours?' asked my mind.

CHAPTER V

A World at Bay

"A MONTH later, hell was loose. Our civilization was broken up. The herd instinct which built it had given way. All the climbing from individuals to groups, from groups to clans, from clans to nations meant nothing to men who roamed the dead cities as their ancestors had prowled the jungles. The veneer was off. All our vaunted progress had taken us no higher than the first rung of the ladder; that rung broke and we were back where we started.

"The dwarfs had stolen our power, they had hit us literally where we lived. All the Lestrangle batteries went dead and with them our world stopped. Save in the great tide-stations which still made power for the useless batteries, not a wheel could turn. It was chaos.

"Planes fluttered from the skies, ships wallowed in the seas, airships floated away on the winds, factories were silent, elevators dropped, trains were checked, ovens cooled, radios died, cars were pulled up and every light failed.

"It was nine o'clock at night when the great stoppage came and it was the darkness which caused the panic. Across the world in the sunlight they cannot have had that catastrophic madness in which crowds rushed, milled and swirled without reason, without object.

"How it was done nobody knew. Perhaps it was a ray against which they shielded their travellers. Perhaps—but what is the use of speculating on the possibilities of such minds?

"I was in the city, the roar of the city's

life rose through my open windows. One moment, busy hubbub and bright lights, the next, silence and darkness. I stumbled across the room and looked out into a pitchy gulf which might have led to the bowels of the earth, so quiet—a quiet which seemed to wait—a quiet during which men died. During which cages dropped down mines, divers got no more air, loads fell from cranes, acrobats missed trapezes, surgeons cut too deep.

"From below there came a scream and as if at that signal a murmur rose. The voice of the crowd growing louder and louder, wilder and wilder. My eyes could see nothing, but my mind saw devilish things happening in that street. Bodies crushing at the walls, ribs cracking under pressure, eyes bursting from their sockets, lungs labouring for air, corpses trampled under foot and corpses unable to fall, while above it all rose now the senseless roar of that wild beast, the mob, destroying itself.

"I moved back and sought the telephone only to find it as dead as the lights. It was not until then that the full meaning of the crisis came to me. It had seemed an unusual failure of current only, now I realized in a flash what it meant and knew it for the dwarfs' masterstroke.

"They had been roused from their patience at last. Of the several messages sent out on their world-wide system since our useless investigation, I had heard only one. It was almost pleading in tone.

"'Our destinies must be worked out, nothing shall stop that. We wish you no harm—we are not butchers—but you are leaving us no alternative.'

"The voice went on to appoint 'stations' for transportation. In the northern plains of Italy; North and South France! near Johannesburg, South Africa; Salisbury Plain in England; in Florida, California and Illinois for the United States and so on to the number of sixty or more.

"'I wonder,' said one of my companions, 'why they always make these announcements in English?'

"Another listener, a blond young man looked us.

"You will excuse?' he said. 'But I haf

chust heard them perfect German use, nod English.'

"I attempted to explain that the messages were conveyed directly to their minds without the use of sound. That they merely *thought* they heard. After this, each obviously considered me more of a fool than he thought the other.

"ON the set days crowds flocked to the starting places. Except for a few cranks such as daily expect the end of the world, nobody save the cameramen went from any motive than idle curiosity. A holiday spirit was abroad. There was the prospect of a free show of some sort and the likelihood of a good laugh at the dwarfs' expense. The cameramen were the only survivors.

"All the world saw the films of what occurred. It was announced that the cinematographers had been allowed to return in order that we might see the simplicity with which transportation was effected and thereby lose any nervousness restraining us. The particular version I witnessed was taken at one of the American stations and was, I was told, typical of all.

"Around a structure resembling an enormously enlarged 'time traveller' stood a cordon of police and guards. The space enclosed was about two hundred yards square. Reliable witnesses stated that a couple of hours earlier there had been no sign of the glittering framework with the result that among the majority—still incredulous of the idea of time traveling—there was a tendency to regard it as a magical piece of construction work rather than accept the fact that it had just made the journey across five hundred thousand years.

"Beyond the cordon the sightseers parked their cars and got out to examine the machine with awe. Whatever they had expected in their inmost minds, it was not this huge silver cage; they were impressed in spite of themselves.

"The murmur of the crowd as we heard it through the speakers seemed to betray a nervous tension, but curiosity backed by a sensation of safety in their numbers kept them waiting for the show to begin.

"Without warning, parts of the enclosure on all four sides fell apart making entrances.

"A gasp of surprise went up from the house as we saw that the guards whose duty it was to keep the public clear, had stood aside from the gaps. Some of them even motioned the crowd forward.

"Not a sound now came from the speakers. As though in a dream the sightseers trailed slowly into the enclosure. Suggestion? Hypnotism? Heaven knows, but in they flocked solemn faced, vacant-eyed, old men, young men, women and girls alike, even the dogs joined the procession. It was as though some piper led the way. Then, when the last had entered, the police and the guards followed.

"In the darkness of the theatre, Mary gripped my arm.

"'Now I begin to understand what you mean by their 'power,' she whispered.

"As the last guard entered, the entrances snapped shut. Simultaneously a few yards from the great 'transporter' a dwarf appeared on a one man 'traveller'.

"Mary grew tense and another gasp rustled through the audience—it was the first time any of them had looked upon one of those men of the far future. He jumped from his machine and ran towards the enclosed crowd whose apathetic eyes appeared not to notice him.

"In a corner of the transporter we saw for the first time that a small cabin was divided off from the main bulk. We saw him enter it, we saw him turn the dials, we saw his hand upon the lever and—nothing. Nothing before us but the empty plain and a little one man traveller.

"The picture continued; there was more to come. For five minutes the audience sat in silence or whispered speculation. Then, as suddenly as it had gone, the machine was back again, but, save for the dwarf in his cabin, it was empty. . . .

A World Aroused

"THE world was roused at last. No type was heavy enough for the newspapers, no terms weighty enough for the

radio announcers. The casualties (as they were determined to call them) at the sixty odd stations came well on towards the 200,000 mark. The old cry went up—something ought to be done. The prestige of governments was at stake. The vermin must be wiped out.

"The members of the investigation committee were hastily summoned and this time received a better though no more profitable hearing. A stern-faced official faced me across a broad desk. His manner suspected me of complicity, his method savoured of third degree.

"What we want to know first is, where's this base of theirs?"

"I've told you as near as I can. All I know is that we seemed to go south-south-east from the Algerian coast, as far as I could tell by the sun. We went that way for about three hours so if you know the speed of the ship, it ought to give you a rough idea of the district."

"You must've seen some landmarks, at the height you were."

"Precious lot of landmarks in that desert—and as we didn't know beforehand where we were likely to be going, nobody happened to have a pocket map of the Sahara on him."

"No need to get fresh. We've got to get a line on this business somehow, and it'll be better for you if you help us all you know how."

"Well," I said, "I'll tell you this. If you ever find that base, you'll have to thank luck—not cross-questioning."

"What're you gettin' at?"

"Just this. Not one of us has any idea where this place is, or what makes it different from any other place that has a lot of sand, but even if you get there it's pretty good odds against you seeing the building. Do you seriously think that a gang who hypnotize a crowd of three or four thousand men and women into an overgrown bird-cage can't stop a few pilots from seeing them?"

"The man snorted.

"When one of our pilots knows where they are—," he began.

"—then there'll be one less pilot in the force," I finished for him.

"Of course they got none of the information they wanted from us—we hadn't it. Even then I had begun to realize that if we knew a whole lot we'd still be as helpless as sheep against men.

ITALIAN, French, English and German scoured the desert, failed to find a trace and brought home their bombs. A report of the position of the base reached Tripoli. Through hurry, the Italian officers in charge omitted to verify the information. Their rocket shells destroyed a French desert fort. Feeling already ran high against France who was thought in some circles to be in league with the dwarfs. Undoubtedly they were on French territory. A French pilot made matters no better by announcing his destruction of the dwarfs' cylindrical flyer at approximately the same moment that the Germans reported that one of their airships had been bombed by a French plane. Notes began to pass between countries and the threat of war added fuel to the excitement.

"It was then that someone at the Suez English base made an inventory with the startling result that five days of profitless searching showed twelve English airships and nearly a hundred planes unaccounted for.

"The French, German, Italian and Egyptian authorities investigated and revealed a similar state of affairs in their own air forces. The fate of all those craft remained a mystery. Solo searching over the desert became less popular with the result that, instead of single machines disappearing, whole flights vanished together.

"It fell to an Italian pilot to do the world the worst possible service with the best possible intentions.

"He had become separated from his unit and was heading for home in accordance with the regulations that single planes must not be risked, when he saw almost below him the shining building for which all the world was searching. Whether his mind was not susceptible to their control (as was found to be the case with a few) or whether

they were off their guard, never was known and did not really matter. What did matter was that his five great bombs flashed down together.

"It must have been a rude shock to that pilot when, during his congratulations and celebrations, the voice spoke again.

"People of the Twenty-Second Century,' it began with usual formality, 'we appealed to you first as reasoning creatures. You failed to reason. You even failed to understand that if we are not successful, man will count for nothing—he will have lived in vain. Then we treated you as children who must be led—you spoke of it as a tragedy. You described as 'casualties' men and women who are now living in the future, not one cell's life the worse for the journey.

"Now you have taught us to know you for savages. Your ridiculous bombs did no harm to our building, but you killed thirty of our men who were outside. Those thirty were worth a thousand of you and you killed them by an action no more reasoned than that of a frightened brute. We shall not kill you in revenge—the art of living is not killing, but we warn you that those who remain here three weeks from now will start to kill one another. For the rest the transporters will be at their stations. Make good use of them.'

"Hundreds of thousands laughed.

"We've killed some of 'em—we'll beat the lot,' was their attitude.

"But other thousands heeded the warning, surging in crowds to the machines.

"Mary and I were of neither party. I suppose it was sentiment which held us. The road to safety was plain, for the dwarfs never lied, yet the call of familiar things was too strong. We were standing by the world we loved till the last. Going down with our civilization.

CHAPTER VI

Nearing the End

“ALL governments published futile edicts forbidding approach to the transporters. Planes were headed off, trains stopped, roads blocked, but still the crowds swept forward on foot. Infantry

and tanks sent to turn the stream, joined it. The authorities reached their wits' end.

"The English sent rocket shells against the Salisbury Plain station. Hundreds of their own people died. The transporter was scarcely scratched.

"In California two men finding themselves immune from the dwarfs' influence, attempted to steal a small time traveller—they were never seen again. Thereafter the dwarfs arrived in pairs, one to work the transporter while the other guarded their travellers.

"For the full three weeks the huge machines made their two or three journeys a day, but the hundreds of thousands they carried were like a few spoonfuls from a full bucket.

"And now, standing in my dark room, I knew that the end had come. Men and women had started to fight insanely in frenzy of fear. Soon they would become hungry. They would prowl like famished beasts, ready to eat even each other. The dwarfs had thrust our ultimatum upon us. It would not be long now before the multitudes were besieging the only means of escape from a maddened world—the transporters.

"In my mind a plan was growing, a slender chance. First I must get out of this crazy city and find Mary.

* * *

“TOGETHER we lay in a clump of low bushes. Not far from our hiding place, a line of haggard men and women was struggling towards a transporter.

"The evacuation of a world,' I heard Mary murmur.

"Some dragged barrows of possessions, some could barely drag themselves. There was no need now for suggestion to impel the crowds. They were striving their utmost towards those feared or despised machines which had become glittering symbols of rescue. Many staggered from fatigue to fall in their tracks.

"If the dwarfs use suggestion, to help on the fallen ones—count,' I said. 'They won't need much power and if you keep your mind full it can't touch you. Fill it up with figures. Multiply and multiply so

that there's room for nothing else. It's our only safeguard."

"Luckily there was no test of our concentration. Friends pulled the stragglers up and urged them along the last lap of the journey. At last the transporter was filled. The entrances clicked together. Those who were shut out retired to throw themselves on the ground. They would have to wait for the next load.

"Get ready," I whispered to Mary as I drew a rocket pistol from my pocket.

"The two small time travellers appeared. One dwarf ran to the transporter; the other sat on guard in his saddle. I reckoned that the big machine would be away in about twenty minutes since it would take that long for the weary crowd to file out. As the first dwarf vanished with the transporter, I drew my aim on the second.

"It is a horrible thing to kill a man who is off his guard, but it was necessary. Merely wounded, he might bring his friends about us in a few seconds.

"Now," I cried. Together we sprang for the travellers as the dead dwarf rolled from his seat.

"Get on," I ordered, setting the dials. I put Mary's hand on the lever.

"Pull," I said. But, instead, she leaned out and pressed her lips to mine.

"I love you," she said. She said it as though she knew the end had come. Then her hand flew back to the lever. I shouted to stop her, but it was too late—she had gone."

Jon paused in his tale. We did not interrupt; the grief in his face held us silent.

"Where is she now, I wonder?" he said slowly.

"When she drew back her hands it brushed one of the dials. I had been so careful—worked out the position of each to a hair so that there might be no delay in our coming here. So that we might travel together far away from our world of chaos, far away, too, from the threat of a dying world. One

hasty move she made which may have carried her further than the earth's death or beyond its birth. She is a castaway somewhere in the jumble of time and space."

"But you?" asked Lestrangle. "How—?"

"Oh, I jumped on the other machine. The crowd had seen us. A hundred or more of them were pelting across the field. It was as though I had the one lifebelt on a sinking ship. They jumped at me. The traveller rocked as they hit it. It was falling as I pulled the lever—it fell in your laboratory.

"But what's the good of it all? I'm alone. Better to have gone on to the end with the people of my time. Why did I come here when I knew she couldn't be here? If I'd kept the machine, I might have searched—I'd have searched all time to find her."

A bell on the wall shrilled suddenly.

"Quick, Wright," said Lestrangle, jumping from his chair. "The laboratory alarm. Somebody's spying—take this."

He handed me a pistol and held one himself. Silently we raced to the laboratory wing and flung back the door.

A familiar silver framework glittered at us. Beside it stood a figure clad like our visitor.

"Mary, by heaven," said Jon's voice behind us.

"Jon, Jon," the figure cried and ran towards us.

A few moments later Jon Lestrangle walked over to the traveller and examined its controls curiously. He looked up with a smile.

"Obviously, Mary," he said, "some patron saint guides your hand. You might have altered the setting by six hundred years or six thousand, but you *did* only alter it by six hours."

He turned towards Professor Lestrangle.

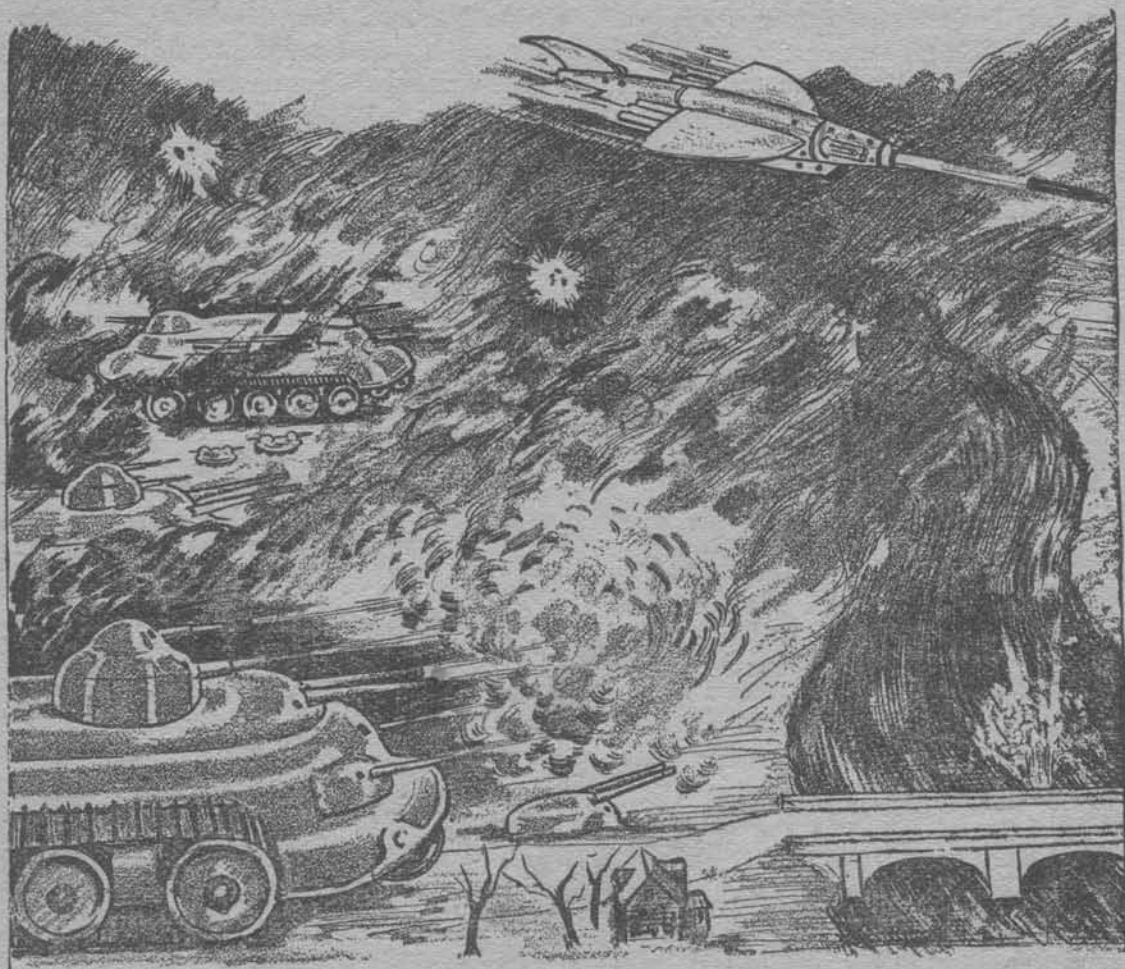
"If you please, great-great-great-grandfather," he said, "I should like another piece of string."

THE END

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The War of the Giants

By Fletcher Pratt



“WELL, all right,” said the brown-faced general, rolling up a map. “It’s dangerous, of course, but as Napoleon said, ‘You can’t make an omelet without breaking eggs.’”

“To be sure, to be sure,” said the fussy little man in a uniform covered with gold braid and strips of ribbon, who had just advanced the plan. “We must expect losses. We must expect quite severe losses, in fact. It would not surprise me if the first division of battleship tanks were wiped out. But we will certainly succeed in eliminating the robot guns on the reverse slope of the heights and perhaps some of the railroad

artillery also. I think it is worth it, rightly worth it. If we succeed any number of plans will suggest themselves, and with our present superiority in battleships we can well afford the loss.”

“The first division, eh?” said the brown-faced general, fluttering over some papers. “Let’s see, that includes *Vengeance*, *Glory*, *Thunderbolt* and *Caesar*, with cruiser and whippet tanks attached. The old *Thunderbolt*. Why I commanded her once!”

“Yes, yes,” said the fussy little man. “Will you be good enough to give the orders, sir? Operation CZ-4 is the index number.”



(Illustration by Marchioni)

Smoke, dirt, flame—the sound of a million anvils as the fleets swept about each other in a great circle.

The other rang a bell.

* * *

"It isn't the heat that gets you, or the noise," said the man with the scarred chin, licking the end of a cigarette reflectively before applying it to his lips. "It's the rotten smell. Petrol, hot oil and sweat—yes, and leather. . . . And that isn't all. You have to keep your mask on when they start, and those new makes smell like rubber

and medicine."

He lit the cigarette and blew a snort of smoke through his nostrils. "Last time I was that sick when I got out I couldn't even take a nip of whiskey."

"Mmmm," murmured the short man with the bald forehead. "And I get seasick every time I go rowing on the lake."

The man with the scarred chin looked at him sharply. "You better not be seasick,

The old man's nuts on you late draft men that lay down. What were you in before?"

"Aviation. I was on motor repair. I got a wife and three kids, so they gave me selected duty. I'm a motor man."

"Well, I'm married too. . . ." the man with the scarred chin thought for a moment. "You must be on the right forward motor. Last man on that job was killed quick as a wink. Shell from one of those robot guns came through the casemate and burst right under the motor. Drove one of those levers clean through him. There's the place."

He half-turned and waved in the general direction of the tank that stood like some queuing monster in metal, snout lifted to sniff the air, a few yards away. Half way down the hundred-foot flank of the beast workmen were busy painting a new and shining steel plate that had been welded in just below a projecting broadside gun.

Above their heads two more guns projected from shielded casemates, while higher still a big gun in a turret atop threw a long shadow across their work. But if the man with the scarred chin expected his companion to exhibit any sigh of nervousness at the remarks of his predecessor's passing, he was disappointed. The small man merely gazed with a languid lack of curiosity.

"You selected duty men!" said the man with the scarred chin in a tone of contempt. "Why, that don't mean a thing any more, with all the women. What's your woman in?"

"Artillery," replied the short man. "At least, she was the last I heard. They don't

pass artillery letters till they're three months old. Gives away positions. Two of the kids are in the factories—one's thirteen and the other fifteen. The other one, that's my little girl, she's in the National Schools. They put her there when my wife was drafted."

"Mine's an officer," said the other with a touch of pride. "Captain. Don't know where she is, though. Last I heard she was in charge of a company in one of those black battalions in the south. I should worry. I got a girl in the repair here, and I'm going to apply for a divorce and marry her."

The short man grunted. After a moment, he spoke again. "Me, I don't want no divorce. The old lady and me, we get along. I had a nice home though. Lucky we were all away with the wife's folks when the war came. That airplane gas attack killed everyone in our section and when we got back to the house everything was corroded to pieces by that damn gas. Curtains fell apart when—"

WE have been hearing a great deal lately about the terrors of the next war. All kinds of rays, the use of terrible gases, of electric currents, are all on the way, we learn, to make extermination of armies certain.

If the exposition of these things by military men have any purpose, they should serve to frighten nations away from warfare. Such a purpose is doubtless contained in this present story.

Mr. Pratt is a keen student of military affairs. He does not leave reason behind and jump into fantasy, but looking calmly at present trends in warfare he gives us this realistic story of a future war. The scene might be laid in any country, and the antagonists might be of any nation or race.

THEY were interrupted by the ringing of a bell like that of a glorified alarm clock from a structure that might have been a pigpen in bad repair. The man with the scarred chin tossed away the end of his cigarette.

"Come on," he said, "that's for dinner."

Within the disreputable building a flight of stone steps led down to an astonishing concrete-lined catacomb, dimly lit, and showing long irregular marks of damp, like the outlines of old maps, along the wall. A hundred or more men were in the main

room, talking in a repressed manner and clattering tin plates as they filed past a wicket where an orderly was distributing portions of stew, bread and coffee. Once served, they filed to tables made of boards placed across trestles and ate silently and with speed.

A whistle interrupted them before the meal was finished, striking the sound of dishes to a momentary silence. An under-officer stood at the head of the room with a list of names from which he read. The short man heard his called.

"You're the new motor man from the aviation?" the officer inquired when he had joined the group that gathered outside. "I have your papers. Why weren't you in the combat sections before? Defective eyesight. . . . Oh, children. They all say that. Ever run a tank engine?"

"No sir," admitted the short man.

"Well, here, I'll show you." He led the way to the metal monster, unlocked a door at the stern and pointed the small man down a narrow, machine-lined passage. "Mind your head."

"Here's your post," he added a moment later, pointing to a steel chair, slightly above and behind a big motor from which a wilderness of levers projected. "Throttle here. Brake here. Signals on this board. Red is full speed and black is reverse. The names are on them, but they use flashes when anything goes wrong. This lever is to throw your engines in for the ammunition hoist of the turret. This type of tank has the eight-inch gun in the turret on top instead of in the center below. The ammunition hoist is electric, but it's apt to go out if we get hard hit. Then they have to use a mechanical hoist connected with your engine. Watch your signal for that and never mind what the boys in the casemates are doing or the man at the other en-

gine. That's all. Look it over. Duty in fifteen minutes. We're joining up with the main fleet then."

The small man bent to examine the motor, fingering its parts with practised hands, and occasionally wagging one of the levers in a speculative manner to test its action; then looked about him. His motor lay in a kind of narrow shell well cut off on the right by a steel wall. At the left was the cat-walk down which he had come, leading forward to another steel wall with a door in it—the control station of the tank. Astride the cat-walk and between him and the control station the supports of the big turret came down, like the stout metallic legs of a titanic spider. Across the cat-walk to the left was another motor, its seat unoccupied.

A prolonged series of hoots announced that the rest of the crew were being called to their quarters, and a moment later the surface of the catwalk rang with the impact of feet. A door beyond his seat was opened and four men crawled through it, one after another. Through the orifice he caught a glimpse of the gray mounting and paralleled recoil mechanism of a gun with a row of

shells in racks around the casemate behind it. The last of the four gunners turned to face him as he passed through the hole and he saw it was the man with the scarred chin.

"Here we go," he called in encouragement. "This old tank, she's a lucky ship. I been in her ever since the general used to command here." The casemate door banged. An officer came down the catwalk, dived into the control station and emerged with an armful of packages which he dealt out to the crew. The little man unfolded his to discover a complicated vestment—helmet, gas-mask and bullet-proof shirt, all in one, made of cross-braced strip steel. Each bore the red hand shaking a thunderbolt that was



FLETCHER PRATT

the emblem of the ship.

He struggled into the thing as a small bell rang sharply in his ear and the indicator before him jerked to "Slow". He threw in the throttle, cocked his head to catch the sound of the motor, and felt the big landship bump across the uneven ground as they gathered way. Feet tramped on a floor above his head.

Into Battle

THE whole structure shifted and heaved with a motion not unlike that of a ship in a steady swell. He felt a curious qualm. Wonder if I'm going to be seasick? he asked himself and banished the idea as the bell rang again and the indicator turned red before him. . . .

They halted in what, when they got out of the tank, proved to be a high, narrow valley, shut in by open pine forest. There was a cloistered air about the place that made the ribbon of camouflage above them seem grossly inappropriate. The little man pulled off his metal shirt, and observing that the others had merely snapped open the face part that held the gas mask put it on again in confusion.

All around them were gathered the ungainly rhomboids of more tanks; three other battleships, each with its heavy turret gun atop and its row of three to five broadside guns. A few whippets scurried about like insects and up ahead, where the valley split in two to round a projecting shoulder of mountain, some cruiser tanks could be seen—long and narrow with two or three guns apiece.

The man with the scarred chin gave a glance around and a low whistle. "Must be going to be a battle," he said, "Well, I'm glad we're in a lucky ship."

His companion looked around. "Where's the infantry?" he asked innocently.

"Infantry? Ha, ha. They haven't had infantry for the last two years. You wait; you'll see why. Too much gas and things. Look."

He pointed up the valley where three more tanks of battleship size were coming to join the group. One of them looked not

unlike a metal porcupine with spikes of wire jutting in every direction; the others unarmed save for a couple of machine guns had conical openings that seemed to run far back into their interiors.

"What are they?" asked the little man.

"The fuzzy one is a radio machine. Sends sound waves to jam up the enemy's robot guns and radio waves to jam their torpedoes. The others are gas—shoot big gas rockets; corrosive mostly, to kill off artillery and tanks."

"Hey, Jake!" called a gunner from one of the whippets with a blue hammer on his armor, "been up to the city?"

"Naw. No leave no more. The city's all done for anyhow. They keep throwing gas in."

"But I get letters from my girl in the National Schools," objected the little man.

"All right, all right," said the other. "But do you know where the National Schools are now? They're out in the country, along with everything else. You ain't seen any newspapers but army newspapers lately have you? Because there ain't any."

The conversation was interrupted by another series of hoots and the irregular eddies of men in the valley separated into orderly streams which delivered themselves into the tanks again. An officer came down the catwalk of the *Thunderbolt* distributing the composition gloves which were the protection against corrosive gases likely to seep even into the air-tight interior of the tank. A fan somewhere began a screeching buzz—the air purifier that insured a gas-free supply of air for the motors of the tank. A moment or two more and the indicators moved to "Slow" again.

It was dark when they halted under the shadows of another forest. The gauges showed no gas in the atmosphere; the crews stretched themselves luxuriously, with open masks, drifting off to sleep without a word, and being awakened an hour or two later when a convoy of provision machines brought them fresh rations instead of the pocket tabloid food they had expected to use. The small man ate his with heavy-lidded eyes, went to sleep immediately and did not wake again until he felt himself

shaken and woke to see a non-commissioned officer pointing him toward the tank.

It was in the false dawn; lights and luminous panels in the machine showed most of the crew busy about some small concern, resolutely occupying themselves to relieve the tension of the moment before a battle. The wood was filled with subdued whisperings, and rocked gently to the sound of distant, oft-repeated thunder—far-away artillery, the small man guessed, though he had not heard it before.

There was a momentary pause, the bell rang and the signal moved. Going into action, he thought, and breathed a silent prayer that this tank was indeed the "lucky ship" his acquaintance had proclaimed it.

FAR above them, out of sight in the purple-black of the dawn sky, an airplane circled, and its radio sprang into lively clicking as the row of dots emerged from the wood and started like slugs across the low slope that led down to a river. . . .

The tanks were lumbering in orderly ranks across the rolling slope that had once been a grain field of some kind, for a few ears of feral corn could be seen among the weeds that encumbered the irregular edges of old shell pits.

The day grew paler; the river swung silvery across the landscape. There was not a gun, not a man, not a trench in sight—only the iron monsters moving slowly along with the whippets nosing here and there among them and the cruisers along the flanks. Within his ship, the small man could hear nothing but the smooth sound of his motor.

Suddenly there was a startling high scream followed by a quick, virile crash, and a fountain of earth and vegetation rose smokily into the air two hundred yards behind the tanks, at the edge of the wood they were leaving. As if released by that signal, clouds of intense black smoke poured from them and from the whippets, settling along the ground in tattered ribbons in the still air. There was another crash of sound and a tree tottered majestically downward at the edge of the wood. The smoke cloud hid everything but the whippets at its edges; the *Thunderbolt* rocked with sound as the

turret gun on her roof went off suddenly, aimed at a target eight miles away.

A cloud of airplanes soared like wintering geese across the sky, and from away beyond the river, another cloud rose to meet them. The smoke surrounding the tanks was shot with vivid flame as a shell burst right among them, the fragments of its casing ringing against their walls. Then more and more shells, many of them adding a curious white smoke to mingle with the black effluvium of the land-ships.

The whippets clustered and then spread at the edge of the water, waiting for the larger ships to force a passage. Shells were falling more thickly now, occasionally hitting. The small man felt a great heave as his ship passed over the remains of a whippet, blown to disordered fragments by a direct hit; and still there was no sign of an enemy save where the airplanes were locked in their battle far above.

There was a sudden grinding crash in one of the casemates of the *Thunderbolt* behind where the small man sat above his motor. He jerked his head round to see the door bulged sharply inward, with wisps of smoke eddying through the cracks. When he looked again there was a red stain on the steel. He felt sick. An officer came down the catwalk, clinging to projections as the craft rolled, looking like a deep-sea diver in his helmet. He did not even glance at the bulged-out door and its bloody stain. A curious pale mist—the noxious mist of mingled poisonous gases, filled the interior of the ship.

The water churned to foam as the battleship and cruiser tanks began to cross the river, wallowing clumsily, and attended by whippets that dashed through the shallows like terriers. Behind the crest of hills that lay two miles back from the opposite bank the robot batteries of the enemy were working feverishly, served from underground by sweating gunners, men and women, who piled shells on the elevators which carried them to the guns. From them, mechanical arms reached out to stuff the ammunition into their maws; the breech blocks snapped shut, animated by a spirit of their own; and the big guns, making automatic correc-

tions for range and deflection by means of disc-shaped mechanical ears, concealed in rubbish heaps, under trees, everywhere—some of them even in the very ground the tanks were crossing—fired themselves at the moment when the range was correct. Further back, heavier guns on railroad trucks had begun to fire slowly under airplane observation.

Nor did all the shells fall among the tanks. For the porcupine-like machine the small man had seen the night before had improved the dark hours by digging itself well underground and now from a dozen or more sources was releasing waves of sound that brought a good half of the shells from the robot batteries crashing uselessly down in the woods.

But now a new element entered the battle as some few airplanes broke free from the combat above the clouds and swooped like swallows on the mass of black smoke that hid the attacking tanks. Down after them swung pursuit planes; up from the round rose slender, interweaving bands of smoke as the anti-aircraft guns of the whippets went into a frenzy of action against them. Here and there one burst into flame or fell with the peculiar dizzy motion of a machine out of control, but the rest held on, releasing their missiles at the bottom of the long parabola, then swung up and away.

The War of the Giants

AS they made the turn, their missiles sought the tanks through the murk—fish-shaped torpedoes with long wings at their heads, carrying sound devices like those controlling the robot guns, and trailing behind them the pennons of smoke that indicated rocket propulsion. Nearly all fell fallow, blowing great pits in the ground, their sound control failing in the multiple uproar of the battle. But one struck a whippet and disorganized it into tattered ribbons of metal and another, its mechanical ears caught by the sound of a badly working motor on a cruiser tank, struck the landship squarely at the base of the turret. In a burst of intense flame the moving fort of steel folded together as though it had

been cardboard, the turret pitching in on the ruins of the rest. When the fleet had passed only the forefront of the tank remained, leaning at an odd angle above the shattered remains from which bright flames still burned.

Right on the heels of the aerial attack a pillar of smoke between two hills announced the approach of an enemy tank fleet, rushing up to support the now close-pressed robot guns, and at almost the same time, a titanic discordant buzzing beat down all the other sounds of battle. Another, or perhaps two more, of the queer porcupine-tanks had followed the attackers in the rear and were adding their sound camouflage to the din. The robot guns swung to and fro, helpless in this torrent of sound, till the operators were fain to come out of their pits, cut loose the automatic controls and fire them by the old hand method.

Of all this the small man above his motor knew nothing. Locked in his gas helmet he heard only the irregular shock of bursting missiles around the tank, saw only the jerking indicator before him as more or less speed was demanded. To the gunner with the scarred chin the battle was hardly more intelligible. The only thing his eyes could catch through the malleable glass that formed his window was the billowy smoke, shot with color here and there as a shell exploded. The odor of the helmet was fetid, the strain of merely waiting intense; again and again the turret gun above went off, firing at its far-away targets, but there came no call for the broadside artillery.

Then without warning, the smoke thinned and altogether ceased. He perceived they were just mounting a ridge; two or three whippets dashed past for the head of the line, and he noted that one of them had her wide torpedo-port open and that an aerial torpedo was pointing outward, ready for release. The bell for loading rang sharply, the *Thunderbolt* pivoted round like a ballet dancer, and through his peep-hole the gunner caught a glimpse of dim figures emerging from a low-hung cloud of smoke that moved toward them down a gentle slope a mile and a half away.

The turret gun fired again, with a violence

audible even in that torrent of sound, and the gunner just caught a glimpse of the trail of smoke that marked the passage of an aerial torpedo bound toward the enemy fleet. The *Thunderbolt* changed direction again. A shell pitched a column of dirt across his vision and a small voice cried—"Fire at will, concentrate on third tank," and to his astonishment he was looking down the sights at a line of enemy cruisers. He went into a fury of action.

Smoke, dirt, flame—the sound of a million anvils as the fleets, firing together, swept round each other in a great circle. Perhaps five minutes that were an eternity; then from the opposing fleet billowed clouds of smoke as, too late, they made the fatal discovery that they were opposing a battleship attack with mere cruisers. Too late—a mushroom growth of smoke and flame marked where one had been blown up; another was stopped where her fleet left her, with flames of a peculiar orange hue pouring out of her turret. A third staggered out of line like an injured animal and moved oddly across the space between the two fleets, still firing steadily, but losing motion and life as it became the target of the concentrated fires.

But at that moment there came a huge uprush of dirt right ahead of the *Thunderbolt*. Hammers pounded on her carapace; she lurched violently through a snowstorm of dirt and rocks, across the crater the shell had made. The gunner caught a glimpse of whippets emitting smoke again; of the enemy fleet, which should have been retreating, closing in instead. The robot guns, hand-trained now, were in action again, and at point-blank range.

NOTHING visible but smoke; a loud-speaker voice began suddenly to call off range and deflections, and the gunner with the scarred chin worked like a fiend, perspiring violently inside his coat of mail, setting his sights on the indicator that ran round the gun mouth according to the data shouted through the loud-speaker. A thinner streak of smoke; through it a cruiser visible, canted over on her side and burning vigorously. "230, deflection fifteen

right—fire!" They bumped violently over something, whether tree, house, ruins of a tank or merely a lump in the ground the gunner could not tell. Then a stunning explosion which drowned the insistent voice for a moment; the *Thunderbolt* changed direction with such speed as to almost throw him from his seat, and through his window he saw the torn remains of a big tank, her forepart shot with flames, one of her side guns drooping like a melted candle, while two or three of her crew ran a step or two from the wreck and fell writhing to the ground. On a still-intact stern-plate a painted halo still showed.

"My God," thought the gunner. "The *Glory's* gone." What did it mean? Defeat? and he wondered would it would be like to be a prisoner, carried off to work on the farms for the enemy, or to dig in their mines. Not so very different from—

The smoke rolled clear again, and he looked out on a different section of landscape. Right against them stood the slope of a hill; out of the tail of his eye he could see the wreckage of a big robot gun, and as the tank swung along, caught sight of another, pointed right at them, but riven by a direct hit in the fraction of a second before it could fire. The enemy's fleet must be done for! They were cleaning out the guns.

A jet of steam ran round the inside of the casemate, clearing the gas. All over? Not quite, for the frightful uproar without did not seem to have decreased in the least, though there appeared to be no shells falling near the *Thunderbolt*. The gunner swung his window in its pivots, noted that the *Thunderbolt* was leading the line of tanks along the reverse slope of a hill, with the turret gun firing occasionally as the observers reported some new gun position visible. The battle was over for him, however. The turret gun would take care of the rest of that robot artillery before his gun ever got within range.

See there was one, now, tipped over on its side, the delicate mechanism smashed by a direct hit, the corpses of two or three gunners lying about. He could have laughed. And then, out of the shadow of the ruined

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The Beast of Ban-du-lu

By Ed Earl Repp



(Illustration by Lane)

He lashed out with his tail. It curled around Tyber's throat like a whip. There was an explosion from the brush.

AS silent as the ghastly shadows about him, the man-beast moved through the steaming jungles of Venus. His green, fire-flecked eyes at the sides of his head, were staring wide, his long, reptilian tail curling rigidly over his broad, man-like shoulders, every nerve in his scaled, upright body taut to the scent of a strange smell. Despite the thick, brittle vegetation that almost hid him from view, he made no sound that could have impinged on the eardrums of the tense, almost terrified humans who listened and watched from behind a wall of matted *equisetae*.

Professors Tyber, Bingham and Watson and the meagre crew of their electronic flyer which had carried them through space from the earth to Venus on a scientific exploration, watched the strange man-beast as he slid like the product of a nightmare, through the stifling forest. The creature emerged slowly into a small clearing, sniffed the air like an earthly vertebrate, and let his tail glide from his shoulders as though convinced of his safety.

Not a breath of wind stirred the dense growths. Giant ferns, horsetails and monstrous lycopods stood as stiff and rigid as the man-thing among them. The air was hot and stifling, as the earth had been in the dim ages when humanity came into being upon it. Overhead were flame-shot clouds through which filtered the sun's rays, making the air hot and humid. Steaming pools were everywhere and they were filled with savage fish

whose long, hungry jaws snapped occasionally at giant, droning dragon flies. Frequent flashes of jagged lightning split the threatening heavens, but the man-beast paid no heed to it.

The humans watched him in fascination. The creature stood upright like a man, on two scaled, muscular legs ending in broad, two-toed feet. Scaled as he was he looked

more like a lizard standing upright, tail dragging, but his arms were well formed and each hand was equipped with long, claw-like fingers of which there were four. That he was no mere savage beast could be seen by a broad belt around his waist, worn apparently for the protection of his vitals from savage claws of predatory animals. His head and features added to his intelligent appearance despite the fact that his cranium was protected by a natural shield of bone or horn that projected backward and down over his neck like the head-dress of an American Indian. It was gnarled and horny, but apparently as strong as metal armor.

As he watched the beast, Professor Tyber, anthropologist

and leader of the expedition, sketched the creature on a pad of paper. He dare not resort to his motion picture cameras for a record of this grotesque species of *homo reptilis* as the man-beast could be appropriately classed. The clicking of the mechanism might bring him down upon them in an instant to spread death and havoc in their scant ranks.

Tyber's accurate pencil flew over the

IT was probably only an accident in an age of the remote past that gave intelligence to a race that finally developed into men. Perhaps if some other accident had occurred, the reptiles, or fish, or birds might have developed that adaptability to environment that we call intelligence and have become the dominant race on the earth.

On other worlds, there is no telling what the dominant form of life may be. It may be that conditions have favored no one group and all have developed equally, thereby causing eternally a bitter fight for ascendancy. But nature usually does not work that way. She usually bestows a gift of power on a favored child, but withdraws it if the child does not use it wisely. In this most exciting story of another world, Mr. Repp shows clearly the struggle between opposing races for survival.

page, recorded the beast's thick nose and savage, cruel lips, and finally paused at the tip of the undulating tail. He regarded the drawing for a moment and then returned the pad to his pocket as the beast suddenly concentrated his attention on their place of concealment.

The anthropologist's blood ran cold and his hands trembled with uncertainty. The man-beast of Venus sniffed the air as though trying to locate the strange, mystifying smell that dilated his nostrils. He cocked his head sideways and looked squarely at the wall of tangled growths behind which crouched the fascinated humans, then advanced toward it slowly, menacingly.

Professor Tyber nudged Bingham. The geologist's high-powered rifle slid into line with the approaching menace. It made a scraping sound as it was glided along a brittle, sun-hardened growth. The man-beast had heard. Bingham's finger curled around the trigger but he held his fire hoping that the approaching man of Venus would change his course.

Suddenly the weird thing halted, looked around him calmly and deliberately, then rent the still, soggy air with a shrill, prolonged cry. The humans crouched aghast. High-powered pistols were drawn by tense, bloodless hands. Tyber picked up his motion picture camera and held it to his eye for focussing.

THE scientists had not a doubt but that they had been discovered by the fearless man-beast, and Tyber was sure that the cry had been a signal to others. He knew that it was hardly likely for their presence to be unknown on this young world. Though the electronic flyer had plunged down through the clouds silently under the attraction of gravity, it must have been seen by countless Venusian eyes. By Tyber had a great de-

sire now to be within the protection of its steel, armor-plated hull. He had a deep-rooted premonition that a tragedy was imminent.

Despite his great fear for the safety of his party, he held his ground. The camera began to click. The man of Venus stood as still as a stone idol, only the tip of his muscular tail in motion, regarded the jungle surrounding the invaders through unblinking eyes. His head swung to the right so that his right eye covered the spot from which came the strange clicking. His nostrils twitched and he sniffed again. The camera clicked on in Tyber's shaking hands. Perspiration excited by fear and uncertainty mounted on his palms, making the camera slippery. Watson eyed him excitedly.

"Hadn't we better retreat, Tyber?" he whispered softly in a quivering voice.

"Not yet," hissed Tyber between his tightly-closed teeth. "If we move the devil'll charge us. We'll have to kill him and I don't want to do that—yet."

Bingham glanced along the sights of his rifle. He had drawn a fine bead on the center of the Venusian's broad forehead.

How close the creature was to doom he could not know. But a single twitch of the geologist's tense trigger finger would send him into eternity. But Bingham was no fool. To pull that trigger would undoubtedly cause the creature's nearby companions to swoop down upon them. The savage cry had been a call for help, and he knew it.

"Better to kill him now than be killed," Watson's voice trembled almost under his breath.

"And stir up a hornet's nest, Watson?" mumbled Tyber. "This brute has friends right handy!"

Watson was becoming too nervous for his own good. His pistol was in line with the



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beast who still stood in the clearing, in an attitude of indecision. Watson seemed ready to fly to pieces at any moment. Tyber sensed it and he warned him to put away his gun. Watson did so reluctantly, mumbling dire things to himself.

They were startled suddenly by the sound of padding feet in the jungle off to the left. Tyber watched the man-beast. The creature cocked his head in the direction of the sounds and his eyes flashed. Then out of the dim aisles of towering ferns and vegetation filed a score more of these grotesque Venusians. Quickly they approached the lone creature in the clearing. They halted there in a knot and the scientists heard some sort of a strange discussion in deep-throated gutturals.

Tyber's camera continued to drone. There came from it suddenly the slap of loose film and he knew that the cartridge had run out. Silently he slung the automatic machine over his shoulder by a leather strap and picked up his rifle. His mind worked rapidly in spite of his uncontrolled excitement. He nudged Bingham again.

"They're getting ready to rush us, Bing!" he whispered softly. "I've got a notion to let 'em know that we mean no harm to them."

Bingham glanced up into the other's sweating face.

"How?" he answered.

"By going out there peacefully," said Tyber quickly.

"Don't be a fool, Tyber!" the geologist grumbled. "We're not in Africa among people of our own race!"

"They haven't weapons," Tyber argued, "and you could drop them before they harmed me."

"Don't do it!" insisted Bingham. "It's foolish!"

"Maybe so," mumbled the anthropologist, "but it might save us all from an attack and probably death."

He shot a glance at the man-beasts. They were spreading out now in preparation to rush the spot. His blood ran cold and icy beads dripped off his brow. Without hesitation he stood erect, rifle held menacingly, and stepped over the matted growths. The

Venusians halted abruptly in their tracks and stared at him in astonishment.

"Tyber!" snapped Bingham heatedly. "Come back!"

But Tyber ignored him and kept on toward the astounded beasts. They seemed too surprised to make a move and stood rooted to the soggy ground. Bingham's hands shook. He withdrew his finger from the trigger for fear of pulling it accidentally. Without turning his head he hissed to the others.

"Cover the idiot, men!" he growled. "Shoot the first beast that threatens to harm him!"

They nodded grimly. The jungle bristled with high-powered weapons. Flashing eyes glanced along dancing sights. A score of Venusian lives hung in the balance.

CHAPTER II

Hostilities!

PROFESSOR TYBER boldly but cautiously stalked toward the creatures. He held his rifle now in the crook of his left arm, his right elevated high above his head in a gesture of friendship. In Africa that gesture had gone to display his friendliness more than once, but Tyber might have over-estimated the intelligence of those whom he sought to convince on Venus. They were indeed hostile. Their fire-flecked eyes appraised him in an unfriendly manner, their thin lips curled in a beastly snarl.

He sensed suddenly a growing hostility among them and halted. Behind him he heard a buzz of excited voices. He knew that he was amply covered by the guns of his party, but what if they were insufficient to stop a headlong rush of the Venusians?

Tyber's boldness was turning to regret now. Quickly he glanced back in the direction from whence he had come. He saw nothing but tangled masses of shrubbery. A guttural voice drew his attention back to the creatures. They were edging toward him slowly, their arms outstretched, tails undulating like the tail of a stalking lion. He backed away instinctively, his rifle now in readiness. Still he did not shoot.

"We are friends and mean no harm to you, men of Venus," he blurted excitedly. They continued to advance, their faces blank of anything but what seemed to be a lust to kill. He knew they had not understood. He had merely spoken to relieve his instinct for flight.

"Come on back, Tyber!" he suddenly heard Bingham's voice call from the underbrush. "Watch that big fellow on the left!"

Tyber was watching him intently. One huge man-beast, perhaps a head taller than the others, was advancing more swiftly now. The sound of Bingham's voice did not halt him. His clawed fingers writhed in a frenzy and his reptilian tail curled and uncurled like the spring of a watch.

Tyber's nerve was beginning to fail him now. He backed away steadily, keeping his eyes centered mostly on the big fellow who seemed to be the leader of the pack. Then suddenly something happened that brought a scream to his throat.

The big fellow suddenly lashed out with his tail. It curled around Tyber's throat like a bull whip. His rifle flew from his grip and he was jerked roughly to the damp ground. There was an explosion from the brush. He looked up expecting to see his captor drop with a death rattle in his throat. But no such thing happened. The beasts were rushing past him toward the hidden party. Only the big fellow remained behind and closed in on him like a flash.

Helpless and terror-stricken, Tyber looked up at him. There was a blue hole in the center of his forehead from which oozed a purplish liquid. By all the laws of humanity the fellow should have been dead, yet the slug seemed not to have affected him in the least. Tyber lashed out savagely to kick at his captor. His booted feet collided with scale and bone. The Venusian's lips parted in a strange smile and Tyber received a blow on the side of his head that reeled his senses. Vaguely he felt himself being picked up. Something cruel scratched him painfully across the back. He knew indistinctly what it was. The man-beast's claws had raked him mercilessly. Then he became aware that he was being borne away. As he sank into a faint he

heard the crash of dry brush and the crack of a rifle. He imagined he heard men screaming fearfully but was not certain.

THERE was something pitiful in the appearance of Tyber's men as they were borne off through the stifling jungles of Venus. Tyber had revived after a short time and was straddling the bull-like neck of the beast that bore him away. His frequent glances at the other informed him that some were either dead or injured. Bingham's head hung grotesquely to one side and his face was bloodless. Others sat upon their captors' shoulders in utter resignation.

Where were they being taken? Tyber found himself asking that question silently. Was there a village of some sort nearby where they were to be sacrificed to some weird god of Venus? Or were they to furnish the bill of fare for some savage banquet? Try as he might, the anthropologist could arrive at no conclusion and he began speculating on the strange connection of the creatures with the *homo sapiens*.

He wondered if men had looked like them in the dim days following the advent of the Devonian period at which time he knew humanity on earth began to evolve from the fish and reptile. Surely no skeletal remains of such a creature had ever been recovered from the earth. He concluded, after a time, that life on Venus had arisen in the same manner as life on earth, but pursued a different course. Man had gone off to live in trees. The superior Venusians had taken another path of evolution, developing from the family of reptiles.

Presently Tyber became aware that his chest was paining. He knew what was causing it. The beast's gnarled, overhanging head armor was rubbing him with every stiff step the creature made. He noticed for the first time that the Venusian's head was bent far to the front to permit him to carry his burden on his shoulders. Then Tyber had a peculiar idea. A thought raced through his head and he glanced at the creature's neck.

"So that's why the beasts didn't drop!" he told himself silently. "Their vulnerable

spot is protected behind their natural armor! That's strange! Bullets don't hurt them much from the front, but I'll wager a slug in the back of the neck would drop 'em!"

He glanced at Watson who was riding the creature beside him. The astronomer's gun was in his holster. Tyber instinctively felt for his own pistol. He found it nestling in the holster at his belt. His hopes soared.

"Grab your gun, Watson!" he yelled suddenly. "Every man who can shoot aim your guns at the back of their necks and fire when I do!"

There were grunts of amazement from the alert members of the party. Tyber stealthily drew his pistol, slipped the safety catch and prepared to fire into the brute that held him. Before he could pull the trigger something whined past his face and curled around his throat. A bony tail held him tightly. He was yanked savagely from his perch. His gun exploded as he fell, but the bullet went into the air. The weapon was snatched from his grasp quickly by an enraged Venusian and he was cuffed soundly for his daring act.

The others, watching closely, held their fire, fearing to meet with a similar treatment. Fearful lest the beasts take their guns, they replaced them in their holsters or hid them resignedly under sweaty, soggy shirts. They saw Tyber picked up bleeding and subdued. The procession continued without further interruption.

They beheld as the procession went on, strange, grotesque beasts slinking off in the jungles. Monstrous reptiles of the saurian species looked up from their feeding and then ambled away as though afraid of the upright creatures who bore fear-filled human burdens.

For hours the parade continued at a set pace. Bingham had long since regained consciousness. He suffered a deep gash across his scalp where the tip of a savage tail had collided with it. He had lost much blood and his face was white and drawn, but he seemed very much alive to the situation. Often he glanced at Tyber's blood-smeared face. Tyber heard him groan and looked back at him.

"Hurt bad, Bingham?" he asked.

The geologist shook his head.

"Mighty weak and have a splitting headache," he returned dejectedly. "And you?"

"Feel like I've gone through a mill," said Tyber grimacing. "They beat hell out of me when I tried to shoot at them."

"I must have been out, then," Bingham growled. "I wonder where we're headed for and what's going to happen to us."

"Don't know," said Tyber curtly, glancing at the others, and counting them mentally. "What became of the other four men?"

"Four men missing?" Bingham began counting. He was silent for a moment and then grunted gloomily. "I guess you're right, Tyber. Four men are gone."

"They beat it into the brush," interjected one of the flyer's crew. "They're as good as done for. They could never find their way back to the flyer."

"Hard luck," Tyber shrugged. "We anticipated such things as this. How many men dead?"

"Five," the mechanic stated flatly. "And every man more or less scratched up from those devilish claws!"

"You're the leader of this expedition, Tyber," another man suddenly snapped. "It's up to you to get us out of this mess!"

Through the Jungle

TYBER glanced at the man coldly and glowered.

"I tried it, didn't I?" he growled. "You saw them throttle me for it!"

"Mighty weak-kneed attempt!" the arrogant fellow snarled. "You had no business going into the clearing when Bingham warned you to stay back with us. We might have gotten away. . . ."

"Every man of you was paid well for his services!" Tyber hissed authoritatively. "When you signed on this trip you were told plainly that grave dangers and possibly death would be encountered. You came of your own volition. I'll do all I can to return you safely to earth. That's all any man can do."

"He's right," said the mechanic. "We

volunteered to come on this trip, so let's make the best of a bad thing and take it like men, not like a pack of snarling rats!"

Tyber eyed the man warmly and nodded. "Thanks, Biggers," he said evenly. "Don't worry."

The other man scowled but remained silent. The man-beasts were likewise quiet. Not a sound escaped their throats all during the unpleasant discourse, but their pace was slackening now. Presently they halted and placed their burdens on the ground, in a small clearing. A sparkling pool shimmered in the center from which arose wisps of steam. The men looked at it and groaned in chorus. No cold, invigorating drink here and their throats were parched and dry.

Tyber and his battle-scarred men stood on the soft, marshy ground and stretched their legs. The Venusians, now circling them, watched curiously. The scientists in turn appraised their captors with an air of distrust. Then the big man-beast approached Tyber and pointed to the ground. Tyber's eyes followed the gesture. For the first time he saw that the jungle floor was literally alive with spiral-shelled mollusks and wabbling, red-striped beetles. He returned his gaze to the fellow quizzically.

The big Venusian switched his mighty tail along the marsh and brought it up in a half-circle in front of him. The movement swept up a mass of struggling mollusks and beetles. He calmly bent over and selected some of the larger creatures and cracked them open with his powerful, taloned fingers, as a man would crack an almond shell. Tyber was appalled to see the beast remove writhing creatures from the shells and gobble them with relish. The Venusians pointed again to the ground and then to his loathesome mouth.

The man-beast was gesturing for him to eat, but Tyber certainly had no appetite for such a fare. Nor did the others. They watched in silence while their captors gorged on the natural supply of viands furnished by the torrid climate of Venus. After a time Tyber drew his pipe and proceeded to smoke it. The man-beasts looked up from their feeding in amazement.

They did not appear over-hostile now.

Instead they seemed bent on protecting their captives until their arrival at some chosen location, perhaps a Venusian village. But how far they were from the flyer Tyber did not know, and he felt that the machine had gone out of their lives forever. Surely they could never retrace the Venusians' steps through the trackless nightmare of jungle. Whatever thoughts he might have had of escaping were gone now.

The big Venusian moved suddenly toward Tyber and removed the pipe from his mouth. Tyber scowled at him belligerently, every muscle taut. It might be said here that the scientist was indeed a young man, being scarcely more than thirty, with the blood of a long line of scientific explorers coursing through his veins. He was not a man to be trifled with lightly, though he restrained an urge to bash his heavy fist into the savage face before him. The cold, deadly look in his eyes would have warned a human instantly, but the Venusian paid no heed to it. He turned the pipe over in his claws and then stuck it suddenly into his mouth.

The man-beast sucked on the stem, coughed violently and made a wry face. He opened his mouth and emitted a stream of green saliva, and Tyber saw for the first time that he was toothless. He laughed at the fellow's discomfiture as the smoke from the strong pipe choked him. The pipe was dropped to the ground quickly. Tyber picked it up.

"Serves you right!" he snapped coldly. "Men and belongings of men don't go with beasts like you, Venusian!"

Biggers, the mechanic, who had been watching closely, chuckled.

"You tell 'em, Tyber," he grunted. "They're a bunch of hogs!"

The Venusian seemed on the verge of striking the scientist but for some reason refrained. Tyber sensed that the beast blamed him for the nausea that came to him from the well-caked pipe. The monster grunted. The others cocked their eyes at him. The halt came to an end and once again the humans were picked up to be borne deeper into the jungle and farther from the safety of the electronic flyer.

CHAPTER III

Bartered!

NIGHT fell suddenly on the strange procession as it moved toward some mysterious objective. The skies became shot with incessant flashes of lightning. The atmosphere was saturated with a vibrant electricity that made every object stand out in violet relief. Terrifying crashes of thunder pounded down upon the ultra-tropical world. The sky was a display of fire and flame.

The Venusians seemed tireless. They went on at a rapid, steady pace. The humans were close to exhaustion from the thickness of the stagnant air and they were thirsty and hungry. Tyber was dozing in a pleasant stupor when a solid sheet of rain fell from the heavens. The water was almost hot. Great drops splattered against his cheeks from an angle and he cupped his hands enough to wet his leathery, feverish tongue. The man-beasts plodded on steadily, paying no attention to anything but the trail in front of them.

Tyber's blood ran cold suddenly when he beheld a gargantuan monstrosity looming up ahead of his carrier who lead the parade of peril. It was a gigantic *diplodocus* more than a hundred feet long from the tip of its savage, fang-studded jaws, to the end of its long, reptilian tail. The beast was outlined with a purple glow caused by the incessant electrical displays above. It surveyed the procession through glittering eyes for a moment and then lumbered away. Tyber watched it, wondering why the savage brute had not attacked. From what science had determined from skeletons of such beasts found on earth, they were indeed merciless fighters. But why did they hold the man-reptiles of Venus in such high regard? Was there some strange power of the reptiles that created the respect of the monsters?

A terrifying scream sounded somewhere in the jungle. Tyber and his men shuddered and tensed fearfully at the ungodly sound. Then another high-pitched shriek came from the same direction. The man-

beast under Tyber shrugged his powerful shoulders and grunted.

"Bal-un-deva-jas! Dev-ut-al!" he grunted in two weird syllables, addressing the others. Immediately they began to discuss some event in their Venusian language that sounded to Tyber like the senseless grunting of a hog. But he was pleased to learn that they had some means of vocal communication. He was eager suddenly to learn it as he had learned many languages on earth. It seemed preposterous to him, however, that such brutes could speak. He listened intently.

"Jas-ut-deva-tol!" grunted the beast behind the big creature.

They chorused a series of grunts that Tyber accepted as a sort of agreement. He was somewhat of a linguist but certainly no language like that existed on the face of his earth, though it might have been a universal tongue in the dawn of earthly humanity. He began speaking in various dialects to the beast under him, but the latter's silence was evidence enough that he failed to understand any of them. After a time he dozed again, his chin on his chest, his body swaying loosely with every step of the Venusian, lulled by the hiss of the rain, the crash of the thunder and the hideous screams that echoed through the jungles.

When Tyber awakened the rain had ceased and the skies were less forbidding, though lightning still flashed intermittently to set the dawn ablaze with its violet luminosity. It was a red dawn, aglow with the rare colors of the spectrum. The sun had not yet risen, but its rays was not needed to heat the jungle. It sweltered and steamed; the air was soupy and thick, making the men struggle at times for breath.

Finally the procession forged through a strip of denser jungle vegetation and emerged into an almost bare area of considerable size. For a moment the man-beasts halted to stare at the scene ahead and then continued onward. Tyber was amazed at what he beheld and Bingham, behind him, groaned inwardly.

"This is where we meet our finish, Tyber," he said forlornly. "It's a Venusian city!"

Tyber shrugged indifferently and studied the strange sight. He heard his few remaining men gasp in astonishment. The city in the center of the great clearing was indeed a great sight. It was totally different from any on the face of the earth, and stretched far on every side.

AS though hewn from a great block of blood-red sandstone, the Venusian metropolis presented the appearance of a tremendous honeycomb. Tyber's interest in the place increased as they neared it. He marvelled at the strange architecture that appealed to the eyes of the inhabitants. Surely creatures such as bore him and his men toward the place could not have the intelligence nor the ability to evolve and construct such a mammoth structure, he concluded.

His eyes roved swiftly over the place. The honeycombing did not begin for perhaps a hundred feet above a solid wall as sheer as some terrifying abyss. Above this the wall seemed to have been deliberately chiseled in the shape of hexagonal apartments, though no galleries ran along the openings on the outside. He wondered what lay within. The place was as silent as a tomb and in the increasing light of the new day the city seemed a place of blood due to the color of the materials.

In the foreground was a herd of strange beasts, browsing peacefully in a shrub-filled pasture. They looked up at the approaching marchers and then rose into the air with the grace of eagles, to settle down again a half mile away. Tyber was awestruck to see the monsters take wing with such ease. To him they looked like the results of a cross breeding of a horse with a lion and an eagle. He glanced at Bingham questioningly.

"What the hell, Bing?" he inquired blankly. The geologist looked at him wearily and nodded.

"Hippogriff!" he said quickly. "Half horse and half griffon, a seemingly fabulous animal with the body and legs of a lion, the wings of an eagle and the head of a horse. Strange monsters, aren't they?"

"Hell yes!" ejaculated Tyber. "I won-

der if they are used by the Venusians as we once used horses?"

"I wouldn't doubt it," said Bingham. "They seem tame enough and powerful enough to transport a giant through the air."

Suddenly the brute who carried Tyber emitted a shrill cry that pierced through the clearing like the shriek of a locomotive whistle. Instantly the call was answered from within the Venusian city. The marchers halted in front of a huge, solid rock gate. There came the sound of padding feet and the gate was thrown open. But the man-beasts did not enter.

They deposited the humans on the ground and formed a circle around them, the biggest of the horde facing the creature at the gate. The scientists were astounded to see that the beings who had opened the gate were even more human than those who had captured them. Their tails seemed only half as long, their hands were well developed, each having four fingers almost clawless. They had cleaner features and eyes that were closer to the center. And around their waists they wore metal belts from which dangled curved weapons of black metal.

At a glance Tyber knew that they were a higher breed of the *homo reptilis*. Their broad foreheads bespoke greater intelligence and their whole attitude displayed a superiority to the captors of the earth-men.

The two factions began to argue in guttural tones. Tyber knew the reason. The man-beasts were trying to sell them to the city dwellers. But for what price? He wondered until a creature suddenly dashed away and returned with four of the broad sword-like weapons. These were immediately presented to the big savage who in turn gave up custody of his captives.

Throughout the deal the humans watched intently but in total ignorance of what was being said. Bingham wondered why the city dwellers were so anxious to buy them. Watson trembling, edged up beside Tyber. Tyber encircled an arm around his shoulders in a gesture of assurance.

"Buck up, Watson," he said softly. "It

could have been worse. I don't think they mean to harm us."

Watson shook his head sadly, bitterly.

"I'm thinking of the earth, Tyber," he said gloomily. . . . "The wife and kids—"

"Pipe down, Watson!" snapped Biggers suddenly. "You ain't the only one who left everything dear to him to come on this crazy trip!"

Tyber gave the man a savage glare which silenced him at once. The man-beasts of the Venusian jungle began moving off in the direction from which they had come. Tyber watched them for an instant. They never looked back, but hurried away, satisfied with the deal. The men trembled for what was in store for them behind the wall.

The Gaze of the Ruler

WITHOUT further ado the humans were herded through the gate. Tyber was not surprised to find a mob of the creatures waiting for them in the center of a hard-packed compound within, but he looked longingly at the great gate when it swung closed behind them. Hundreds of the Venusians at once surged around them and the guards were forced to draw their weapons for protection.

This action made Tyber's hopes soar. Surely the Venusians meant them no harm, else the mob would have been permitted to tear them to shreds. He wondered why they had been restrained. Were they to be sacrificed after presentation to the ruler of the city? Or were they to be looked upon as some sort of slaves by these savage reptilian men?

With a horde following their heels they were led across the compound to a great structure that stretched halfway across the interior. It was low and long and over each corner stood a huge, flaming ball that was as red and blazing as an early morning sun. Tyber was struck with a sudden idea and he whispered to Bingham who marched at his side.

"Sun worshipers, Bingham!" he said flatly. "I'll bet my shirt on it!"

Bingham glanced at the great balls. They were made of some brilliant red material

and were as depthless as a tremendous untarnished ruby.

"I believe you're right, Tyber," said the geologist decisively. "But it hardly seems possible for them to worship like the old Aztecs."

The pack following them howled savagely at their heels. The place was in pandemonium with excitement, but the creatures did not appear as curious about the captives as they might have been on seeing a human for the first time. This struck Tyber as exceptionally strange, but he was soon to learn the reason.

A wedge-shaped group of armed Venusians suddenly emerged from the long structure and confronted them. The guards immediately stepped aside and the captives were taken over by the new arrivals. They were bedecked in red belts with vermilion straps crossing their chests and back to hold them up. The human captives were at once escorted into the building. The place was filled with glowing red spheres. In every corner of the wide corridor they stood on narrow pedestals, glowing like live coals. Everything seemed red, but not so vermilion as the spheres. A blood-color seemed to run riot in the Venusian scheme of things.

After a short march, the captives were escorted into a great chamber around which stood a solid line of armed Venusians with the sword-like weapons lying across their broad, scaled chests, their tails writhing on the blood-stone floor. At one end of the room was a high throne on which sat a monster Venusian who glowered down onto the scene through fiery, ruby-colored orbs.

Tyber felt the full force of the gargantuan ruler's stare suddenly and became so fascinated that he could not tear his eyes away from the creature. He seemed held in some strange power as a snake holds a bird. Hot blood pounded at his temples, his fingers clutched into the palms of his hands, and his eyes popped uncontrollably. A great force pounded on his brain, almost terrorizing him.

Suddenly the spell was broken. The creature on the throne swung his gaze on Watson. The astronomer's knees sagged under the force of the beast's will power.

Tyber grasped him firmly under the arms, catching him as he appeared to sink to the floor in a faint.

"Don't look at him, Watson," he whispered softly. "Keep your eyes away!"

"I—I—I can't," Watson groaned in a voice that sounded weird and almost insane. "I—I—I can't! I—I—I CAN'T!" he began to shriek.

Being by nature a nervous, high-strung man, Watson needed only a new fear to cause him to break mentally. And the eyes of the brute on the throne imbued him with such a fear as he had never dreamed of. He went berserk, like a lunatic running amuck.

With a hideous scream he broke from the guards and dashed madly toward the throne. Tyber saw the grotesque ruler bend over tensely to watch the frenzied human. Like a panther Watson flung himself against the sheer wall of the throne platform and tried to mount it. The scientists were stunned by the sudden, unexpected scene and Tyber impulsively stepped forward toward the insane astronomer.

Instantly four guards confronted him, swords ready to strike his head from his body. He glared at them belligerently for an instant and then returned to his partners in doom. They stood together in a little knot completely surrounded by Venusians and stared up at the monster on the high throne. Watson was babbling and groaning like an idiot at the base of the wall.

CHAPTER IV

The Woman of Venus

EVERY man was tense. The atmosphere became charged with high feeling. Tyber glanced at his men. They glowered back at him in return. Bingham's hands shook steadily and his eyes blazed wide with fear. The guards watched them constantly, ready for any sudden outbreak. Tyber, as leader of the expedition to Venus, turned suddenly and faced the thing on the throne. His eyes were aflame with hatred and deep-seated fear, but he controlled himself with a steel will.

"Now that we are here," he said, speaking in English, "what do you plan to do with us?"

The ruler stared at him oddly through flaming orbs. Tyber fought to hold his senses, realizing that the Venusian had not understood him. Then something happened that completely bowled him over.

A golden curtain behind the Venusian's throne suddenly parted. Tyber had a glimpse of a radiant human face peering intently at him. Then the girl stepped out in full view of every creature in the great room and walked to the side of the ruler. A buzz of excited voices caused Tyber to glance behind him at the amazed faces of his men.

"A woman!" one of them gasped.

"And a peach, too!" said another with an eye for feminine beauty.

The girl was indeed a peach! Her rare, delicate beauty was unbelievable along side of the terrifying features and physical appearance of the haughty Venusian ruler. Her blonde hair was dazzling, her gentle features might have been taken from an Angelo masterpiece and her form, hidden only by a golden breech-clout around her thighs and a strip of golden material across her breasts, gave her the appearance of some goddess of love and purity.

They heard her converse intently with the creature in the guttural tongue of Venus, her voice ringing out clearly and beautifully. The beast looked up at her for a moment, mouthed some evil grunts and returned his eyes upon Tyber. Then the girl faced the group below, her blue eyes flashing in the brilliance of the room.

"What brings you here, my friends?" she inquired quickly in perfect German.

Tyber was stunned. He swallowed hard and groped for words. The sound of the German language was like music to him. He understood it thoroughly, but in his amazement he mixed it up terribly with his own American tongue. She smiled down at him warmly, scarcely able to hide a great desire to get to him.

"You amaze me most pleasantly, Fraülein," he sputtered excitedly. "I had not

expected to find such a beautiful woman on Venus!"

She hung her eyes modestly and addressed the ruler. He grunted and scowled as she told him what had been said. She looked down again.

"The Great Ban-du-lu, ruler of Jan-du-bar," she began again, "inquires what brings you here."

The men behind Tyber shifted uneasily and whispered in low tones among themselves. Bingham, ignorant of the German language, stared at the convulsing form of Watson.

"We came here on a scientific exploration," said Tyber hastily. "As peaceful human beings we meant Ban-du-lu no harm. Ask him why we were taken captive and treated so cruelly by the jungle men of Jan-du-bar."

He paused and waited for the girl to interpret his words to the Great Ban-du-lu. The ruler glared at them menacingly and grunted a series of deep-throated gutturals. The girl paled slightly and seemed to falter. She clutched at the throne as though to prevent herself from falling. Tyber tensed and stared at her.

"Ban-du-lu says you have no right here," the girl said in a trembling voice, "and you are to be given into the keeping of Xip-pa-co-yan."

"What's that, Fraülein?" he asked bluntly.

"In our terms, you are to be sacrificed to the sun," she said in a half whisper, "even as my father's men were sacrificed long before you come to Jan-du-bar."

Tyber's face went bloodless and he glanced at Bingham.

"Did you understand, Bingham?" he hissed.

The geologist shook his head negatively.

"The big devil says we are to be sacrificed to the sun!" Tyber informed him.

"What for?" Bingham asked, growing suddenly fearful.

Tyber looked up at the girl again. He imagined he saw glistening tears coursing down her cheeks.

"Why are we to be sacrificed, Fraülein?" he said coldly. "We have done no harm

to any creature on Venus and we planned to return home in a week or ten days."

"That part does not matter, my friends," she said sadly. "It happened that you were taken at a time when Jan-du-bar offers living sacrifices to the sun. For the past twenty-five years, Ban-du-lu has offered a human being on each occasion when the sun's rays pierce the sun-globes outside directly. . . ."

"Do you mean that there were other humans here before us?" Tyber cried strangely.

"Of course," she returned. "My father conquered space twenty years ago, leaving Berlin secretly with a picked crew, and landed on Venus. The space flyer was smashed and we were captured. I was a baby then."

"Well I'll be damned!" ejaculated Tyber. "Then the Venusians have sacrificed you one by one?"

SHE nodded, fighting to keep from breaking down.

"Only myself and my father remain," she said, "and daddy lies ill, dying."

"But your mother, Fraülein. . . .?"

"She died in space when I was born," the girl said. "She would not remain behind, father tells me, when the flight to Venus began."

"But why have they let you and your father live?" Tyber questioned.

The girl looked down at him appealingly.

"I am to be his woman!" she said, growing suddenly resentful. "For that reason we have been allowed to live. Ban-du-lu has an idea that he wants to start a new race on Venus!"

"Beauty and the beast, eh?" Tyber hissed savagely, glancing hatefully at Ban-du-lu. The girl nodded.

"Venus, the planet of love and beauty," she said, "is in truth a planet of savagery and ugliness!"

"Amen!" agreed Tyber calmly.

She spoke again to Ban-du-lu. The beast snarled like a tiger in reply.

"Ban-du-lu," the girl addressed Tyber, "says that in a fortnight you are to be the first human of your party to be sacrificed.

But," she lowered her voice, "can't you do something? Are you weaponless?"

"Our guns are useless on these creatures," he said, "but why all the rush to kill me?"

"Ban-du-lu resents the way you look at me," she sobbed, "but he can be killed if you shoot him in the back of the head. All Venusian vital organs are centered at the base of the brain."

She shuddered visibly and tried hard to smother the sobs that threatened to choke her before the assembly of court guards and the ruler himself.

"That's what I thought," said Tyber grimly. "We have several pistols. Not enough to fight. I guess we'll go the way of your friends, unless we can escape."

"There is no escape, my friend," the girl stated flatly. "The jungles are places of madness. You can never escape!"

"Do you speak French?" she said suddenly after a brief pause.

Tyber nodded. "As well as German or English," he said, mystified. "Why?"

"Ban-du-lu understands some German my father taught him," she whispered in the native tongue of France. "Father taught me French for want of something to do, but the beast doesn't understand it. Listen! You will be caged under this terrible building until the day arrives for your sacrifice. You will be guarded loosely because they think escape is impossible. Tonight I will help you to escape."

"But you said there was no escape, Fraülein," said Tyber.

Ban-du-lu looked up savagely at the girl and grunted loudly. She jumped nervously like a frightened fawn and stifled a scream. She trembled from head to foot and then gained control of herself. Tyber looked on in wonder, and heard her say something to the ruler.

"What's wrong, Fraülein?" Tyber hissed intently.

She looked down again.

"He suspects something," she said, "and is about to pass sentence of doom upon you all. But listen closely," . . . she whispered softly . . . "I'll unlock the cages tonight. In the room at the end of the jail

corridor you will find four machine guns taken from our space flyer. Get them and fight your way to freedom.

Tyber's hopes soared again, but fell to the depths when he visioned the trackless jungle between the city and the electronic flyer. Yet he resolved suddenly to die fighting, rather than permit his living blood to flow freely on some sacrificial altar.

"Thanks, Fraülein," he said eagerly. "You watch our smoke. . . . tonight. But what about you?"

"Ban-du-lu would kill me if he learned I helped you," she said fearfully, "but if all of you can escape to your flyer, I'll be glad."

Ban-du-lu suddenly stood erect. He towered over the girl by at least three feet. Tyber stared at him hatefully, murderously, his temples pounding. The beast opened his cruel lips and addressed the assembly in thunderous tones. The girl emitted a little scream and sagged against the throne. Tyber knew what had taken place. The ruler of Jan-du-bar had passed the sentence of death upon him and his partners in peril.

Cells of Doom

WATSON screamed hideously when rough, clawed fingers clutched at him to haul him off the floor. Two savage Venusians took hold of him and marched him toward Tyber, Bingham and the others. They were surrounded now on all sides by the guards. Ban-du-lu stood upon the throne, glared down upon the resentful humans and watched them, herded from the room to be placed in confinement until such times as he needed them for worship.

It might appear far-fetched to say that such a beast as Ban-du-lu could worship a higher intelligence with any kind of respect, but the Venusians held more than respect for the sun. They feared the blazing sphere that on certain seasons seemed to make a strange track through the heavens and burn down on them with a fearful intensity. Ban-du-lu, as did his more savage ancestors, believed that sun-worship and human or native sacrifice would prevent the seemingly impending catastrophe. But Ban-du-lu

preferred the human sacrifices in lieu of those of his own kind, for the humans had come out of space and were therefore better morsels for the sun to consume.

But Tyber had only the old, earthly ideas of sacrifice in his mind as he was led down a ramp to a chamber below the throne room. Through his mind raced the thought of being laid out on an altar to have his living heart torn from his body as the Aztecs had done to victims centuries before on earth. He did not stop to consider that there might be a new wrinkle in sacrificial affairs on Venus. Moreover, he had little hope of ever getting back to earth. Escape into the jungle might be possible through the aid of the girl, but deadly peril lurked on every side there and he had but a vague idea as to the exact direction of the electronic flyer which had been landed on Venusian soil early the morning before.

The scientists received another shock when they were finally led into the chamber of confinement. It was indeed a large room with sapling-barred cages or cells lining either side of a wide corridor. As soon as they entered, the place became a chamber of bedlam. Tyber quickly learned the source of the shrieks and ungodly screams that rent the stillness of the place.

In the cells on one side of the room were scores of Venusians of even a higher development than the man-beasts of Ban-du-lu! Tyber stared at them in amazement as they passed. Their tails were short and pointed and useless as weapons, and their features were more human-like and their chests were bare of scales. Their eyes were close to the bridges of their noses and the natural armor seemed like loose skin instead of gnarled bone. This drooped down over their backs and shoulders like the feathers of an Indian chief, and rippled like the light headdress in a breeze, with every movement they made.

They bellowed and shrieked madly at the guards, hissing at times like reptiles, to show their hate for them. Tyber understood at once why they were held captive. They were to be sacrificed. But where had they come from? Was there another great city on Venus that was inhabited by this

higher culture? He concluded that this must be so and sacrificial subjects had been taken from it by the hordes of Ban-du-lu.

Each human was placed in an individual cell, but Tyber had the good fortune to be incarcerated beside Bingham and the raving Watson.

The other members of the expedition, seven in all, were placed in cell-cages beside the leaders. Across the hall were the Venusians. They peered through their bars at the humans who in turn glared back. Four guards loafed in the place, two at either end of the corridor, their black sword-like weapons sheathed, eyes dull with apparent laziness. They seemed unconcerned about the presence of the new human captives.

Watson raved in his cell like a madman. Tyber was appalled by his hideous, inhuman screams. The Venusians across the corridor finally turned their eyes upon him and began grunting in low, almost musical tones. The astronomer hurled himself against his bars with a force that threw him backward to the hard floor. From his lips escaped a continuous prattle. His mind had snapped and with it had gone all his control, will power and humanity. He was a caged beast, literally. Tyber held little hope for him now and watched him intently.

"Buck up, Watson," he said softly. "Get control of yourself. We're going to get out of here tonight.

WATSON crouched at the sound of his voice. His lips trembled frenziedly. From the dribbled a stream of blood, the result of his terrific collision with the bars.

"We are doomed!" he shrieked loudly. "We are doomed! WE ARE DOOMED!"

"Not yet, Watson," Tyber whispered. "We are going to escape tonight."

"There is no escape!" he screamed. "You lie! You lie!"

Tyber still wore a small haversack around his shoulders. It contained medical supplies and antidotes for snake bites, and drugs for combatting malaria. Quickly he pulled the sack around and fumbled for a brass box. From this he selected a hypodermic needle, stuck the point into a small vial and glanced decisively at the astronomer.

"Stick your arm through the bars, Watson," he said easily. "I want to look at it."

Watson eyed him dumbly and approached slowly to the side of his cage. Tyber watched him closely, centering his boring eyes into the insane man's pupils. Watson came forward as though in a trance and then grovelled on the floor. Tyber reached out suddenly and grasped the astronomer by the arm, turned it over and jabbed the hypodermic needle into the limb. The astronomer shrieked and jerked away, but the drugs had been injected. Within a minute he became quiet and finally crumpled over to lie still on the floor.

"Hated to do it," Tyber said to Bingham. "But the poor devil will kill himself against the bars. I'm afraid for poor old Watson!"

"A bad case," said Bingham. "I pity him. But he'll be a charge on us tonight!"

Tyber glanced toward the geologist with a scowl.

"He'll be a charge, alright," he said firmly, "but if we return home he goes with us. We are partners in peril and will be partners in safety as well!"

"Of course, of course," said Bingham hastily. "I did not mean to leave him."

"I did not think so," said Tyber. "I just want to set you straight."

"Thanks!" snapped Bingham curtly. "It will be your job, then, to take care of him! It's every man for himself now!"

"That's mighty rotten of you, Bingham!" growled Tyber. "Of course the strain is telling on you now."

Bingham sulked in his cell and turned his attention to the fascinated Venusians across the room. Tyber studied the lay of the place and finally learned the location of the room in which the girl had said were four machine guns. He wondered if there was ammunition for them.

CHAPTER V

Hope!

NIGHT approached slowly. The jail room became a place of ghostly shadows. A feeble light filtered through a lone,

hexagon-shaped aperture high up near the ceiling. The place was stifling. Sweat poured off the tense, fearful humans in streams. It seemed that every bit of moisture was being sucked from their bodies. Tyber kept a ceaseless vigil on both ends of the room, hoping for the appearance of the girl at one of them.

The Venusian guards sprawled on the floor now. Tyber wondered if they slept. The room was getting darker with each passing instant. But the stifling heat did not decrease as the sun sank out of sight. The muffled roar of countless voices came to him from above. There seemed to be some great excitement in the compound above. The voices gave him the impression that he was listening to a pack of snarling beasts.

Hours passed and the room was engulfed in an inky blackness. The usual nightly thunder of Venus pounded down with terrifying crashes. Lightning flickered through the heavens in an almost ceaseless sheet, casting, finally, a violet gloom over the doom chamber. Still, Tyber watched. Bingham paced his small cell in circles. Watson lay in a stupor and the fear-filled men cursed under their breaths. The Venusians across the room were silent but Tyber could see their beady eyes flashing in the gloom.

Despite their exhaustion, the men could not sleep. Thoughts of rest were remote from their minds now. Tyber had told them what to expect and they were ready. But as the hours passed and the girl failed to appear, they grew restless. Tyber ordered them to be still and they crouched in their cells like dumb beasts, waiting.

Tyber was aware of a gnawing hunger and thirst. No food had been brought to them, much less water. He searched his pack and found some hard, moistureless biscuits. He hissed at Bingham.

"Pass these along the line, Bing!" he said. "Biscuits!"

Bingham reached out and took hold of the bag, picked out a biscuit and passed the remainder to the men. Tyber heard them grunt with satisfaction and blunt, all-meaning thanks.

"Looks like the girl is going to fail us,

Tyber," said Bingham with no trace of his former antagonism.

"She's probably being detained."

"You think the big leader got wise to her?"

"Maybe, but the next hour ought to tell."

"She'll get her neck garroted if she's caught."

Tyber winced inwardly.

"Not as long as I have an ounce of strength in my body," he said grimly.

Bingham chuckled amusedly.

"You wouldn't have a Chinaman's chance to defend her, Tyber," he said gloomily. "Even machine guns won't stop the devils unless you hit 'em in the throat!"

"Would be different if we had one of the flyer's ray guns," said Tyber.

"But we haven't," grumbled Bingham. "I wonder if the men who escaped the fight reached the flyer?"

Tyber grunted in surprise.

"I'd forgotten all about them, Bingham!" he ejaculated. "They might have found it again. If they did they'd have a hard time operating her."

"That's right," said Bingham. "They were observers, not pilots. I had a secret hope that they'd take off to locate us."

"I'm afraid they'd crack up if they tried it," said Tyber dejectedly. "If they do, we're completely sunk!"

Tyber tensed suddenly and hissed a warning at Bingham. At the end of the hall stood a motionless figure, hugging the wall. A flash of brilliant lightning illuminated the room for an instant. The figure crouched, slid past the prone guards and came forward as silently as a ghost. Tyber's lips went tight, his veins bulged. He glanced across the room quickly.

Glittering eyes were watching the lithe form of the golden-haired girl as she crawled along the floor, but no grunts came from the jailed Venusians. Did they suspect a reason for this silent visit of the strange creature of Ban-du-lu's tribe? Were they looking upon her as a goddess of freedom or would they give warning to the sleeping guards? Tyber wondered, with his blood racing to his head like burning lead.

"This way," he hissed in an almost inaudible whisper.

THE girl paused in her tracks and looked toward him.

"Over here," he said softly, sensing her ignorance as to where he had been placed. "Hurry!"

Quickly she glided toward him and stood erect in front of his cell. He reached out and clutched her hand. It was warm and trembling with fear.

"I-I-I'm sorry to have kept you waiting, my friend," she whispered fearfully. "Much excitement reigns above."

"Are they preparing for our deaths?" Tyber inquired.

"Not yet," she trembled. "They fear an impending raid upon the city of Ban-du-lu by the warriors of Hamund-sik, the ruler of the domain beyond the jungle."

"Then there is another city of higher Venusian culture here?" Tyber inquired softly. "Is there to be war?"

She peered toward the guards and then looked toward Tyber.

"There is," she sobbed, "and there is to be war. Ban-du-lu raided their domain and took captives for sacrifice. Now Hamund-sik retaliates."

"Then," said Tyber decisively, "*Ich dien!* I serve Hamund-sik if he will have me!"

"He is good," she said, "but savage. His warriors are held across the jail chamber."

"Can you speak their tongue, Miss—?"

"Call me Cassandra," she said. "I was named after my father who is Professor Cassan Bohler. Yes, I speak the tongue of Hamund-sik."

"My name is Tyber," said the scientist, squeezing her hand. "James Tyber of New York. But listen, Cassandra—if you will release the warriors across the hall, they may aid us to escape."

She looked at him strangely, her eyes flashing with understanding. Without another word to Tyber she crept across the room and he heard her whispering in low tones to one of the Venusians. Presently she returned and informed Tyber that the Venusians would fight for them if they were released. The scientist's hopes soared and

he whispered the news to Bingham, who in turn passed the word along to the others.

"Then open our doors, Cassandra," said Tyber eagerly. "We will wait until all of them are open before setting with the guards. How soon do you expect the warriors of Hamund-sik?"

"Even now they approach Ban-du-lu," she whispered. "In a few minutes they will be here, riding the air on their flying beasts."

"The hippogriff?" Tyber squinted.

"That's what father calls them," she said, "but here they are called the *Ptah*."

"What about your father, Cassandra?"

Cassandra hung her head reverently.

"My father died a short hour ago, Herr Tyber," she sobbed. "I am alone now."

"Not by a long shot, Cassandra," said the scientist, patting her hand in assurance. "Now hurry and open all the doors, then come back here to me. We will always stay together."

The Duel!

ONCE released from their cells, the warriors of Hamud-sik became ghosts of doom. Tyber, with Cassandra, Bingham and his men beside him, watched as they silently approached the sleeping guards. Their presence was discovered by the man-beasts of Ban-du-lu too late. A half hundred invaders swooped down upon them and gloried in the act of spilling their lavender blood.

In the flashes of vivid lightning that illuminated the room not infrequently, they saw the guards torn to shreds within a minute. They had scarcely time to grunt in surprise before they were hurled into eternity by the deadly warriors. Then they returned in triumph toward the fearful humans and Cassandra, taking advantage of her position as goddess of liberty, addressed them softly.

"Follow me and you will have swords," she said in the tongue of the higher Venusians. The humans appraised her in wonder as she spoke, now in a cool, fearless calm. She looked at Tyber. "In the chamber at that end of the hall you will find guns and

swords. Arm yourselves and be ready to fight. Hamund-sik's warriors have arrived. I hear fighting above."

"Thank God!" said Tyber. "Our chance has come!"

With a bound he leaped toward the cage in which Watson had been placed. The astronomer lay in a black heap on the floor. Quickly Tyber threw open the door and entered. He was appalled at what he discovered. Watson lay in a pool of his own blood, coagulated and sticky. A gaping wound across his throat and a pocket-knife clutched tightly in a blood-stained fist told Tyber what had happened. Watson, in a fit of insane despondency had committed suicide. He mumbled a silent prayer over the body and returned to Cassandra.

In the chamber at the end of the hall, Tyber found four ancient machine guns. The airless room had kept them from rusting. In a corner lay belts of ammunition. Venusian swords were piled in a heap around it. Quickly he ordered his men to pass them out to the Venusians who accepted them with delight. Then with belts of ammunition draped around them, they charged the guns, picked them up and began the perilous ascent up the ramp toward the throne room of Ban-du-lu.

Cassandra clung closely to Tyber for protection. She glanced fearfully about her as though expecting momentarily to find Ban-du-lu himself stalking her with lust in his beastly eyes. Tyber whispered assurance to her.

"Keep calm, Cassandra," he said softly.

"I'm so afraid, Herr Tyber," she said.

"Ban-du-lu will kill me. . . ."

"Forget about him!" Tyber snapped.

"He's as good as dead right now!"

"But you do not know Ban-du-lu, my friend," she cried. "He is a shrewd, cunning beast, inhuman in his cunning deviltry."

"We'll clean out the throne room first, men," Tyber hissed, ignoring Cassandra's warning. He turned to her. "Tell the Venusians what I said, Cassandra!"

Her clear, soprano voice rose and fell as she interpreted Tyber's orders to the stalk-

ing man-beasts of Hamund-sik. They listened and grunted in chorus.

Finally they attained the top of the ramp and peered into the throne room. The place was partly deserted. Only a few Venusian warriors of Ban-du-lu stood near the throne as though waiting the arrival upon it of the gargantuan ruler. They looked around at the sound of footsteps in the room. Instantly they crouched, swords ready, surprised at the appearance of the Hamund-sik fighters. They caught sight of Cassandra. At once they realized that she had released them, and approached menacingly, fearlessly, looming like purple ghosts in the gloom.

With a solid shout of joy, the erstwhile sacrificial subjects raced forward to meet the warriors of Ban-du-lu. There was a clash of swords, the ring of savage cries, and silence. In the center of the room lay a heap of dead, warriors of both Ban-du-lu's and Hamund-sik's ranks.

Outside a great battle raged. The clash of swords, the scream of the dying and the triumphant grunts of the victorious rent the air above the crash of the thunder. Despite the semi-darkness the two races of Venusians fought steadily. Tyber led his men to the throne room entrance and paused there to watch the raging fight, the warriors writhing in a great knot in the compound which was lighted almost constantly by the incessant lightning that glowed through the skies.

The unexpected raid upon Ban-du-lu by Hamund-sik was an event Tyber considered much in his favor. Indeed, without such a battle as now raged in the city, they would have had little chance to escape into the jungles surrounding it. But he saw only freedom now, and safety. . . . if they could but locate the electronic flyer and gain the protection of its steel hull. After that, Ban-du-lu and Hamund-sik could fight until the end of time for all he cared.

IN the violet light of the flickering heavens, Tyber could see that the forces of Ban-du-lu were outnumbered considerably by the grim, dogged fighters of Hamund-sik. The latter surged into their enemies,

cutting them down in droves, their swords stained to brilliant purple. Swords flashed in the night, wielded in mighty Venusian arms. Heads were clipped neatly from shoulders. The city of Ban-du-lu was a place of terror, horror and death.

Before they could be restrained by Cassandra, the Venusians she had rescued broke from the throne building and raced frenziedly into the milling mob, their head-growths waving behind them so that they looked like American Indians going into battle. They wanted vengeance against Ban-du-lu for having cooped them up. Tyber yelled at them as they went, but they paid no attention to him. They were swallowed up at once by the milling, snarling pack.

With machine guns mounted in the entrance of the throne structure, Tyber and his men were ready to defend themselves should the fighters of Ban-du-lu retreat toward them. As he lay beside one of the guns Tyber was startled by a sudden tumult behind him. He looked up quickly to see Ban-du-lu himself and a score of his private guard approaching from the throne room. With a shout of warning to his men he leaped erect, snatched at a sword that lay nearby and thrust Cassandra behind him.

"The guns, men!" he shouted. Cassandra screamed and clung to him. An automatic exploded beside them. A purple hole appeared in Ban-du-lu's scaled chest. A stream of lavender fluid shot out but he came steadily forward. Then a machine gun rattled dryly. The man-beasts halted in bewilderment, some fell headlong with gaping holes in their throats, the backs of their necks torn to shreds. Bingham's aim was true.

In a mighty leap, Ban-du-lu came forward in the face of a deadly fire from Bingham's gun. His body was being riddled, yet his vital organs had remained untouched by the steel slugs that whined around him. Cassandra screamed again and clutched frantically at Tyber, hampering him. Ban-du-lu's great sword swung past his face and he fell back, shaking the girl from him.

"Back, Cassandra!" he bellowed in English, forgetting in his excitement that she

understood little of it. "Back! Hold your fire, men!"

Ban-du-lu, now perilously close, lashed out suddenly with his tail. Its tip struck Bingham a terrible blow across the face, sending the machine gun over on its side as well. The stupefied crew of the electronic flyer crouched aghast, but suddenly another gun rattled above the din of the elements and the tumult created by the struggling hordes. Tyber saw more of Ban-du-lu's private guards go crashing to the floor, but the ruler himself seemed to have a charmed life.

The man-beast lifted his sword, his eyes wide, his cruel lips curled into a significant snarl. Cassandra suddenly raced forward to stand between him and Tyber. Ban-du-lu sent her sprawling with a savage blow across the face. She fell into a heap.

With a bestial cry, Tyber leaped forward. Ban-du-lu towered head and shoulders above him like Goliath over David. But Tyber had no time to make comparisons. The ruler's sword shot toward his throat. He leaped aside. The blade sang past his chin and came back again in a tremendous arc, ripping his shirt across the bosom. He felt a flush of something hot streaming down over his abdomen and in the instant he saw red.

Ban-du-lu's hideous features loomed up oddly through the barrier of flaming hate that danced before Tyber's eyes. His brain cried out for an opportunity to sink his blade into that awesome throat, but the man-beast was indeed a master swordsman and countered every thrust. Tyber had never held a sword in his hands prior to this, but the blood of his ancestors who had wielded swords in defending America in the days of its infancy, welled up in him and filled his hand with skill.

He heard the shouts of his men as he fought to keep that terrible, slashing weapon of Ban-du-lu from his throat. He heard Biggers scream a warning and ducked. The Venusian's blade whined about his head and then his opportunity came.

The End of Ban-du-lu

BAN-DU-LU, lifting his mighty sword high above his head for a final, killing thrust, opened his guard. In the instant Tyber dove forward with all his weight. With an insane shout he aimed the blade at the thick throat of the man-beast and felt it strike yielding flesh. A strange, surprised look flashed across the ruler's hideous face. A stream of lavender liquid shot forth from his throat and sprayed over the scientist. Then Ban-du-lu's sword clattered to the floor and the beast sank slowly toward it. His tail curled and uncurled savagely and for minutes after his life had fled, it continued to writhe like the tail of a snake in the throes of death.

Tyber had won an unequal battle. He stood over the fallen Venusian and buried his sword again in the scaled body. Then he hurled the weapon aside and raced toward Cassandra. She lay on the floor, hiding her face in her hands. He lifted her up gently.

"It's all over, Cassandra," he whispered softly.

"Oh, my friend," she sobbed, "how happy I am to see you alive."

"You mean you care, then?" he asked.

She threw her arms around his neck and sobbed on his shoulder. He carried her back to the group of humans and deposited her among them. In the compound the fight still raged in all its terrible frenzy. A mob of Ban-du-lu began retreating toward the throne structure.

"Let 'em have it, men!" Tyber shouted. "The devils are coming to the protection of the building. Blow 'em to hell!"

Four machine guns began to rattle a chorus of doom. The retreating man-beasts halted in the face of the deadly fire, only to be cut down steadily by the warriors of Hamund-sik. They fell in droves from both front and rear and now it appeared that the Ban-du-lu's would be wiped out entirely.

Cassandra shuddered at the terrible sight and stood up suddenly. Tyber tried to pull her down fearing that a sword might be thrown at her by a vengeful subject of

Ban-du-lu. but she pushed him away. Then her voice rang out above the din.

"Oh, brave warriors of Ban-du-lu and Hamund-sik," she cried in the common tongue of Venus. "It is useless to fight. The great ruler of the Ban-du-lu is dead and his spirit has gone to Xip-pa-co-yan, who will now be satisfied with the royal gift and let Jan-du-bar continue unmolested by the heat of the skies. Ban-du-lu has given himself as a sacrifice to prevent further bloodshed. Xip-pa-co-yan speaks through Cassan-dra and asks that there be peace!"

She paused to see the effects of her speech. The Ban-du-lu, in the face of inevitable defeat and annihilation, suddenly threw down their swords, hurled themselves flat on their faces and grunted loudly. The forces of Hamunk-sik stood upright, sheathed their swords and faced the flickering heavens. Rain suddenly splattered down on the compound in a solid wall. A terrific wind lashed the jungle into an uproar and whistled through the honeycombed walls of the city with wails of menace. Cassandra looked at Tyber in astonishment.

"The tornado!" she said fearfully. "It is coming. It is the first time the feared tornado has ever struck this portion of Venus. My father told me that it never came here. If it does not kill these people it will frighten them into a belief that the sun is angry at them for fighting."

She faced the compound again. Tyber watched, amazed that the words from this slip of a girl could cause the man-beasts of Venus to lay down their arms in peace.

"Xip-pa-co-yan sends the great wind to shake the jungles of Jan-du-bar," she droned. "It will pass and Jan-du-bar will be a place of peace and contentment. Let there be a great banquet in which all Venusians will participate. I, Cassan-dra, who takes Ban-du-lu's place on the throne, command it!"

"That's marvelous, Cassandra," said Tyber. "Whatever you told them sure had its effect!"

"I commanded them to a banquet, Herr Tyber," she said, looking into his eyes. "There will be peace now. . . . for us all!"

"It is unbelievable, Fraülein," he said,

"that they would listen to you."

There was a searing flame appearing suddenly in the heavens beyond the jungle. It looked like some great comet passing close to the surface of Venus. A blinking light informed Tyber what it was.

"The flyer!" he yelled gleefully. "The electronic flyer! The men got back to the flyer, Cassandra, and they come for us!"

She looked at him hopefully.

"Do you mean that it is your ship?" she asked incredulously.

"Our space flyer, Fraülein!" he said joyously. "It will take us back home. You will go with us?"

She rested her head on his shoulder. Together they watched the flyer. Her rocket exhausts seared the heavens with streaks of blue flame. The Venusians watched in wonderment. Then the ship paused overhead at a great altitude. Tyber had a sudden fear that it might go away, but Bingham's voice diverted his thoughts.

"They will see that something is up here, Tyber," he said eagerly. "They're observers and nothing will escape their sharp eyes. But Lord, I hope they don't make a miscalculation and crack up!"

A moment of uncertainty passed; then the flyer's tail belched a sudden spurt of flame. Her nose dipped sharply downward. Finally she settled in the compound. Within five minutes the elated humans were aboard, leaving the Venusians gaping.

Tyber led Cassandra to the observation bridge as the flyer dropped away from Venus.

"The earth lies far ahead, Cassandra," he whispered presently. She stood very close to him. He caught the fragrance of her golden hair as it brushed his face.

"I'm so thrilled," she responded quickly. "Many times have I prayed to go to the world of my father and mother."

"We will land within a fortnight on our world, Cassandra," Tyber nodded.

She glanced at him with sudden fear.

"You will never come back to Venus?"

"Oh, I will, Cassandra," he replied. "But with you only if you want to."

She shuddered and shook her head.

THE END

The War of the Giants

(Concluded from Page 1447)

gun, came one little whippet tank, with its torpedo port wide open. The gunner with the scarred chin saw with perfect clarity that the torpedo was about to be launched directly at him, from a distance of not over three hundred yards—realized in a flash that it would blow the *Thunderbolt* into a thousand fragments, and ducked. He heard no more. . . .

. . . In the rear, the track-laying machines were already preceding the railroad artillery to positions along the river, now cleared by the victory.

* * *

"I congratulate you," said the brown-faced general. "It was a much better result than I had hoped for. Of course, they

were foolish in trying to stand off the attack with their position artillery and in supporting with nothing but a squadron of cruisers; but I think you were lucky, all the same."

The fussy little man could not forebear a smile of triumph. "Yes," he said, "on the whole I am satisfied with the result. The positions along the river will certainly force these people to try an attack sooner or later, and then we know what we can do. . . . And our losses were not so extraordinary, either. Two battleships and three cruisers."

"Yes, yes," said the brown-faced general. "I'm a little sorry about the old *Thunderbolt* though. Knew some of the men in her. Did I ever tell you I commanded her once?"

THE END

FOR THE JUNE ISSUE

we offer

"The Man Who Changed The Future" by R. F. Starzl

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the latest masterly novel of Otfried Von Hanstein, peerless German author. The first installment has been but an introduction to the strange island of scientific wonders, where dreams come true. Now we come to the smashing finish in which all the hates of the envious, the greedy and the destroyers are massed against our little colony. The action here rises steadily to a breathless finish, that may, we are afraid, leave you exhausted.

AND OTHERS IN THE JUNE 1931 WONDER STORIES
ON ALL NEWSSTANDS MAY 1

Through the Purple Cloud

(Continued from Page 1409)

An explosive out-rush of purple vapor hurled them bodily backward, against the canyon wall. They crouched there a few seconds, waiting. George had an arm around Juanita's waist, half-supporting her.

Abruptly the red-violet vapor receded from about them. It became a straight wall of purple light, the surface of a great disk.

"Now!" George whispered.

Half carrying Juanita's slight body, he ran forward, leaped into that wall of red-blue light.

* * * *

The next thing the engineer knew, they were lying sprawled in soft green grass. Juanita had fallen across his body, he sat up with her in his arms. He gazed at the world about him, and shed tears of relief and joy. The sky was no longer a sullen, angry red—it was soft and warmly blue.

Cyclopean, nightmare mountains of dull black stone no longer hemmed them in—they were surrounded by the green fields of the San Joaquin Valley. On one side of them a herd of Jersey cows was grazing. Beyond them stood a pleasant-looking farm-

house. On the other side was a fence, and beyond the fence, an unpaved country road.

The sound of an automobile engine reached George's ears—sounding strange after his ages of silent imprisonment in that other world.

A farm truck, loaded with cans of milk, was coming down the road.

"A milk wagon!" he whispered to Juanita. "Let's stop it!"

She responded feebly and they struggled over to the fence.

The farmer stopped to investigate these poor, tattered, bruised humans, who clung weakly to the fence, crying for joy. A few minutes later he had given each a few sips of milk from one of the cans, and was taking them to the pleasant farmhouse on the hill, where they would find many things that, in their terrible stay in the other world, they had known only in delirious dreams.

"Where on earth have you been?" asked the country doctor, who had been called in, and who assured them they would soon be completely recovered.

"You'd never believe it!" was George's answer.

THE END.

What Is Your Science Knowledge?

Test Yourself By This Questionnaire

1. How has it been theoretically determined to build a typewriter to operate by vocal dictation. (Page 1373)
2. What effect have various colors on nervous reactions? (Page 1389)
3. What has Einstein's relativity done to our conceptions of space? (Page 1401)
4. What is the meaning of the four dimensional continuum? (Page 1405)
5. Who discovered X-rays? Radium? Cosmic Rays? (Page 1410)
6. What is an indication of the power of cosmic rays? (Page 1412)
7. What was the home of primordial man? From what source did man spring? (Page 1452)
8. What is a diplodocus? (Page 1455)

The Cosmic Gun

(Continued from Page 1421)

passage way and the underground chamber. The men we were after had already started the stolen machine whose thrumming we had heard, with the idea of destroying us. The rays of our more powerful machine, concentrated by the lenses, met the rays of the smaller machine.

We all had the impression that there was a tremendous explosion. As no explosion was heard by anyone in the neighborhood, the effect must have been a subjective one. We all saw a great flash of light through which millions of fiery worms seemed to be writhing. That is as near as I can come to describing the overpowering experiences which resulted in unconsciousness for all of us a few seconds later. The last thing I remember is seeing Goodrich reach for the levers of the machine.

Afterward we decided that we were not unconscious long, and we all recovered about the same time. Where the stairs had been was a great hole four feet high and fifteen feet across. There was nothing visible in the blackness of its interior.

"We'll have to find out what's happened," said Goodrich. "Feel well enough to come along?"

"I feel all right," I answered.

Goodrich took Moloney's torch and went ahead. Just inside the hole we found fragments of the stolen ray machine. Beside it were two human bodies and in a large chamber beyond we found ten more. They were all black and swelling rapidly.

"No chance of identifying them," said Goodrich.

"Not a chance."

"There'll be a lot of explaining to do."

"It's a pity the bodies weren't destroyed altogether," I said.

Goodrich looked thoughtful. "If we turned on the machine for a few minutes longer they'd be gone, I suppose."

We agreed with Moloney to say nothing of what had happened in the sub-cellar. There were mysterious rumors, of course, but no attention was paid to them by the newspapers. The Hartridge house was closed up by the authorities and afterward purchased from the heirs by the government.

To this day no one knows positively who was responsible for stealing the ray machine and using it to murder Hartridge and the detectives. We know, of course, which foreign ambassador had been suspected by Hartridge. The day after the tragic events in the sub-cellar the authorities tried to get in touch with him. It was stated at the embassy that he had gone out of town and the date of his return uncertain. Other high officials of the embassy, including the military and naval attaches, were similarly absent.

It is not known whether they ever returned. In fact, a great deal of mystery hangs over the appointment some weeks later of a new ambassador. Announcement was made of the recall of the previous ambassador, but no record exists of his having applied to the state department for his passports.

The government's lack of interest in Hartridge's invention has since his death been atoned for. After the next war, when the necessity for secrecy is no longer a factor, doubtless a monument will be erected to him. Incidentally, that next war has been indefinitely postponed because certain foreign governments have at least an inkling of the nature of the weapon Hartridge bequeathed to his country.

THE END

THE SPRING 1931 WONDER STORIES QUARTERLY
on Sale April 1, at all newsstands
read "Into Plutonian Depths" by Stanton H. Coblentz

Utopia Island

(Continued from Page 1397)

cooling coils, in which the harmful substances are removed by certain processes. Then the purified air, plus a slight ozone addition to make up for the oxygen used is conducted back to the hall.

"It is, after all, the same system that Prof. Oberth, the inventor of the space rocket, has provided for his ships. Besides we would need all this in these rooms no more than light. Here are simply to be the machines for the different industries which we shall carry on as models, while the keyboards belonging to these machines, which activate them, will be in the airy rooms.

"Imagine a carpenter shop! Consider the harm done by the continual breathing of bits of shavings; and the bent position one acquires by planing! Here everything is different. The machines work down below, and the worker sits up above. He has before him a keyboard and at the same time a television screen in which he can always see his machine below. Automatically, according as he uses his levers and buttons, the boards move under saw or plane. A single finger pressure brings them by machine power into the right position.

"The electric plane or saw works more accurately than a person could. Even the finest work will be done here, when for instance a skilled machine carver completes his patterns and arabesques with the machine. When this is done, the machine arm lays the completed board on a moving belt, and in the next room in a similar manner the boards are assembled to make a cabinet.

"There are no laborers here any more, nor any soiled clothes, for our people simply operate keyboards. Merely a few overseers and machinists, with perhaps a few young people to help them, are below and watch over the correct performance of the machines. Likewise this has the great advantage that in all work now entailing noise the disturbance will be in the cellar stories, completely sound proof.

"That these workers are to have constant medical supervision both in their general

health and also in their nervous condition, is a matter of course. Likewise we are providing in a most magnificent way for hardening their bodies by healthful athletics.

"We shall also make experiments to see whether it is beneficial to have music played during the working hours. Enjoyment is always the main thing. In details which must be performed quickly a merry march or dance music will involuntarily enliven the work. In other work, which must proceed slowly and demand a more thoughtful regularity, a dreamy violin solo might well be useful. Who knows whether it will not later on be a perfectly natural thing to have an 'industrial music director', who has exact knowledge of industries and always adapts his music to a tempo and mood to the different work and in this way has a spiritual influence on the workers!

"You all know how a happy march influences one walking, how weariness departs and the legs step out almost of themselves. Why else should there be military bands everywhere! Thus there shall be work bands in Santa Scientia, to make work a joy for everyone, so that it shall not oppress him. It is incredible what the effect that mental attitude has on every person, it makes all the difference in the world whether he is glad to work or if he simply sits out his hours against his will.

"But all this is of the future. As yet we have indeed a city but no inhabitants, and most of our industries are waiting their beginning—coming. . . ."

This time they took the express train in the lowest story of the building. In a few minutes they were at the watering place of Alesia, which extended in pleasant palm valleys below the hill with Weigand's laboratory and took in a volcanic mineral spring.

"Tomorrow I shall come for you. Until then, have a pleasant rest from the weariness of your first days in Santa Scientia!"

With that White departed to take the express back to the city.

(To be continued)



Science Questions and Answers



THIS department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes its impractical, also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

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These nationally-known educators pass upon the scientific principles of all stories.

More Planetary Figures

Editor, *Science Questions and Answers*:
 Would you please supplement your excellent table of planetary data in the March issue. The weight of each of the planets as compared with that of the earth. Also what is the maximum and minimum distance of each of these planets from the sun?

J. E. Hoehne,
 261 W. Ward Pl.,
 South Orange, N. J.

(The following table is offered to complete the list of planetary data in the March issue. The weight of the earth is taken at 13,000,000,000,000,000,000 pounds. (from "The Heavens" by J. H. Fabre)

Planet	Min. Dist.		Max. Dist.		Volume		Mass	
	(1000 miles)	(1000 miles)	(1000 miles)	(1000 miles)	(Earth 1)	(Earth 1)	(Earth 1)	(Earth 1)
Mercury	28,566	43,355			1-17		1-25	
Venus	66,738	67,653			1.		9-10	
Earth	91,342	94,452			1.		1.	
Mars	128,330	154,760			1-7		1-8	
Jupiter	459,940	506,710	1414				338	
Saturn	836,700	935,570	734				101	
Uranus	1,698,800	1,866,800	82				15	
Neptune	2,769,600	2,817,400	100				21	

The volume of the sun is 1,300,000 times that of the earth, and its mass is 330,000 times that of the earth.
 —Editor)

Rays and Rays

Editor, *Science Questions and Answers*:
 I should like to know what kinds of rays there are. I have been reading about so many kinds that I am

rather confused. I have been reading *WONDER STORIES* for only four months but I have enjoyed every minute I have spent in perusing its pages. Although I am only sixteen I like to get away from everything and imagine what the future will be like.

James Whitaker
 619 E. Main Street,
 Olney, Ill.

(Science fiction authors have in many cases erred by not explaining more fully what they mean by different kinds of rays.

In nature we have the emanations of energy in wave form in the electromagnetic spectrum. There are the long radio waves, the shorter heat waves (emitted by radiant bodies) the still shorter light waves, the ultra-violet rays, the still shorter X-rays, the radium rays and the cosmic rays which are the shortest known.

Now, many authors have constructed their own rays of various kinds by intensifying and changing the character of these fundamental rays. The rays from the ultra-violet down to the cosmic, as well as the heat rays certainly possess power for destruction, as many of our authors imagine, and it is possible that many of them will be used in the future as they are pictured in science fiction stories.—Editor)

A Revolver's Kick

Editor, *Science Questions and Answers*:
 In the "Science Questions and Answers" department in the March issue there was an interesting diagram of a revolver suspended in a vacuum, illustrating the principle of rocket propulsion in space. At first sight it was obviously conclusive evidence,

but may I suggest that the revolver moved because the rush of gases pushed against the side of the vessel in which it was suspended. Would the revolver act the same in a very large room or hall which was exhausted in the same fashion?

Frank H. Vear,
39 Vigo Road,
Andover, Hants, England.

(Of course by using a small vessel, it is not at all possible to determine without accurate instruments the exact cause of the revolver's kick. But it can be done. The kick will come at the very instant of firing not when the gases have escaped from the barrel of the revolver. By delicate time measuring devices the very instant of the kick can be compared with the swinging of the revolver due to the gases. The latter motion, we believe would be more erratic than a simple kick for the gasses on striking the wall would spread immediately throughout the entire vessel.—Editor)

The Velocity of Light

Editor, *Science Questions and Answers*:

Will you kindly answer the following questions that have been puzzling me:

1. Is the speed of light altered by traveling through the atmosphere?
2. Do electromagnetic waves travel at the same speed as light waves?

Frank Grant,
4547 Maxpole Ave.,
Chicago, Ill.

(1. Researches that have been made on the speed of light indicate that its velocity in air is practically though not exactly, equal to its velocity in a vacuum. The famous experiments of Professor Michelson of the University of Chicago were aimed at determining the velocity of light as accurately as possible; and the figure found, in 1926, was 186,372 miles per second. Experiments that have been carried out indicate that the velocity of light becomes smaller as the medium that it passes through becomes more dense; thus the velocity through water is less than through air. This variation is just the opposite of that of sound; which seems to travel faster through a denser medium.

At present, Professor Michelson is working on an experiment, which will probably be the most exacting that the world has seen, for the determination of a new and more accurate value of the velocity of light. He is constructing a mile-long tunnel completely evacuated of air through which the beams of light, whose velocity is to be measured, will pass. When his experiment is completed, we should have an almost exact value for the velocity of light in vacuo.

2. Light itself is an electromagnetic wave, just as are the X-ray, the radio wave, the ultra-violet, etc. The velocities of the other electromagnetic waves (that is, other than light) vary from the velocity of light very little. The generally accepted value for all of them is 186,000 miles per second. Thus a radio wave will travel around the earth in less than 1.7 second—and, if a man were addressing an audience before him and speaking into a microphone simultaneously, a listener at a radio receiver on the other side of the earth would hear the speaker's voice before a person in the audience, a hundred feet away from the speaker, could hear him.—Editor)

Rocket Fuels

Editor, *Science Questions and Answers*:

1. Is it mechanically possible to build a submarine with walls thick enough and with observation windows powerful enough to withstand the pressure encountered at 34,220 feet below sea level?

2. What is the best shape for a rocket, spherical or bullet-shaped?

3. What is the best known fuel for rocket propulsion?

Edward Morris,
3914 W. Monroe St.,
Chicago, Ill.

(1. At 34,220 feet below sea level a submarine would encounter a pressure on it from the water of practically 16,000 pounds per square inch. Although metals are now known that stand such stresses in tension or compression, it is to be doubted if they can stand them as a buckling stress, which would be acting on the submarine. It is probable that if the submarine's walls were made thick enough to stand this terrific pressure, the weight of the submarine would be so great that it could not even float on the surface. Certainly no glass or other material to be used for observation windows could stand this pressure. The glass would probably become liquid under the pressure and begin to flow.

2. For use within the earth's atmosphere, the bullet-shaped rocket vehicle would certainly be superior to the spherical, for the resistance of the air would be a minimum. But outside the atmosphere, where air resistance does not exist and where maneuverability and stability are the important factors, the spherical form would undoubtedly be superior.

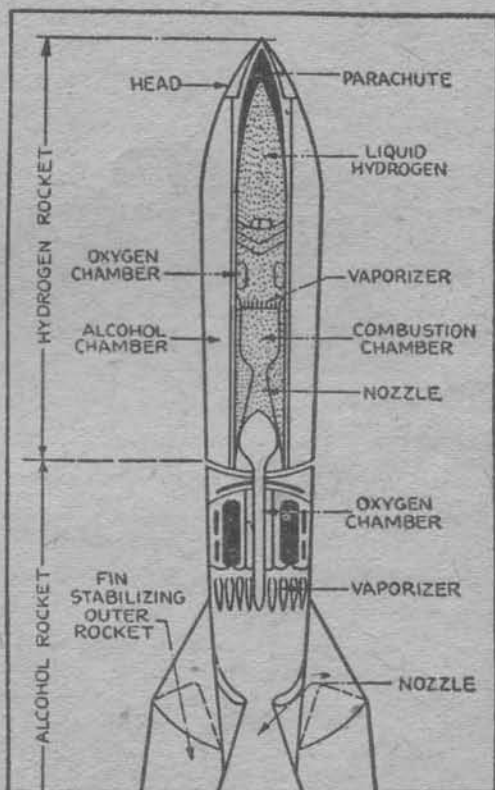


Diagram of a model Oberth two-step high altitude rocket. The upper part is the hydrogen rocket which uses hydrogen and oxygen as fuel, the lower part, which is set off first, uses alcohol and oxygen. The nozzles referred to are the exhaust nozzles of the used fuels. It may be noted that this rocket does not provide for passengers.

3. A number of "best" fuels have been suggested. The combination of liquid hydrogen and liquid oxygen seems to be in the greatest favor although Oberth, the noted German experimenter suggests a dual fuel, the first part to be liquid alcohol and oxygen and the second part liquid hydrogen and oxygen. The first fuel would be used to send a rocket beyond the earth's atmosphere, for during that part of the journey a very high speed is not desired—and for the lower speeds the alcohol combination is more efficient. The hydrogen fuel would be used to develop the higher speeds necessary to escape from the earth. The accompanying illustration shows a typical Oberth rocket in which both types of fuel would be used.—Editor)

The Reader Speaks



EDITOR



IN this department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good

old-fashioned brick bat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 25c in stamps to cover time and postage is remitted.

Infinite Forces

Editor, *WONDER STORIES*:

The current issue of *WONDER STORIES* is certainly the best in a long time. If there is to be a poorest story in it, and all are far above your recent level, it would be either Francis Flagg's "Synthetic Monster" or Ed Earl Repp's, "From Out of the Earth", probably the latter. Marchionis is good, but his sketch went quite far to spoiling Repp's story.

Here is a question—a pretty technical one—that was aroused by Dr. Breuer's two time traveling stories published some time ago. The three Lorentz-Fitzgerald contraction equations are:

$$(a) L \cdot \ell \sqrt{1 - \frac{v^2}{c^2}} \quad (b) T = \sqrt{1 - \frac{v^2}{c^2}} \quad (c) M = \frac{m}{\sqrt{1 - \frac{v^2}{c^2}}}$$

Where ℓ , t and m are the length, time and mass of a body at rest and L , T and M are the corresponding figures for the body at velocity V . C is the velocity of light.

He dealt with velocities v , near the speed of light so that thousand of centuries became a few moments to those in the time traveling ship. He furthermore used a "photon ship" so that only the men in it would be affected by the increase in mass. Now for the question. I hope some one can answer it, for I am not at all clear on the matter.

Equation (c) shows that the inertial mass of any body will approach infinity with velocities approaching that of light. Now will the gravitational mass become infinite also? What if any is the relation between gravitational and inertial mass?

The reason for my question is quite apparent. At the velocity of light, the inertia of any body will be infinite, it cannot be accelerated by any force. But suppose it became infinite gravitationally! Try to imagine the effect of an infinite gravitational mass let loose in the stellar universe! The result should offer a perfect synonym for annihilation and an answer to the old tensor of irresistible force (the infinite gravitational attraction exerted on and by every body in the Universe) meeting an immovable body (with infinite inertia). It would be quite effectively the end of all creation. It would collapse space-time to a point in no time at all, then blow it out to infinity with the force of exploding matter. It would be one glorious finale—and it probably wouldn't happen for I have a feeling that the gravitational mass of a body would not change. I would like to have Dr. Breuer's opinion.

I am certainly glad to see R. F. Starzl in your pages for to me at least, he has become one of the finest figures in science fiction. His command of atmosphere and plot—all the things that make good stories—is supreme and more life-like than even Cummings! Between them they lead the field of those who make fiction rather than technical detail their basis. They conceal their science like the girders support and shape a skyscraper, in the frame of their story and build strongly about it.

In brief, they are good. Now that the Science Correspondence Club is firmly established with laboratory branches springing up, a library and a museum started, and active work progressing in all directions, we hope to be able to become international in our scope. We want foreign members, and even more than that we want foreign branches, units in themselves; for when it is justified each country will have its director, its representative in our governing body, even as the United States is divided now. At present a foreign member may not hold of-

fice but as soon as our members in other parts of the world amount to a reasonable percentage of the total, that will change at least to a degree. We hope it will be soon.

If any foreign reader of *WONDER STORIES* wants to join or would merely like to correspond with some congenial person before deciding on membership, I will do all I can to help him.

Moreover we would like to hear of the work of organizations like the Ilford Science Literary Circle, mentioned in the March number, whether they are basically literary or scientific. Our interests are wide and I hope representative, and we wish every fortune to those who are trying to popularize science and science fiction in England and elsewhere.

P. Schuyler Miller,
Foreign Director, S. C. C.,
302 S. Ten Broeck St.,
Scotia, New York.

(We have forwarded Mr. Miller's stimulating letter to Dr. Breuer, and will publish an answer if Dr. Breuer wishes, in the June issue. Meanwhile we invite the comments of our readers on the perplexing problem offered.)

We offer the following tentative suggestion. Since the inertia of a body increases with the mass, then the energy necessary to increase its velocity continually grows larger as its mass and velocity increase. In other words, we assumed by the Newtonian laws that to increase the velocity of a body by a given amount required a force proportionate only to the increased velocity, for the mass was assumed as constant. Now since the mass increases with the velocity, the force necessary to increase its velocity becomes larger as the velocity grows.

Therefore as the velocity approaches the speed of light and the mass approaches infinity, the force necessary to still further increase its velocity is also becoming infinite. Therefore, the situation necessarily corrects itself. If there were an infinite force, then it could cause a body to reach the speed of light; since no infinite force exists the velocity becomes limited by its own increasing mass, and therefore its increasing inertia.

The Science Correspondence Club, which we understand has become the International Scientific Society, has our best wishes for its career and the spread of its good work.—Editor

A Lower Moral Level

Editor, *WONDER STORIES*:

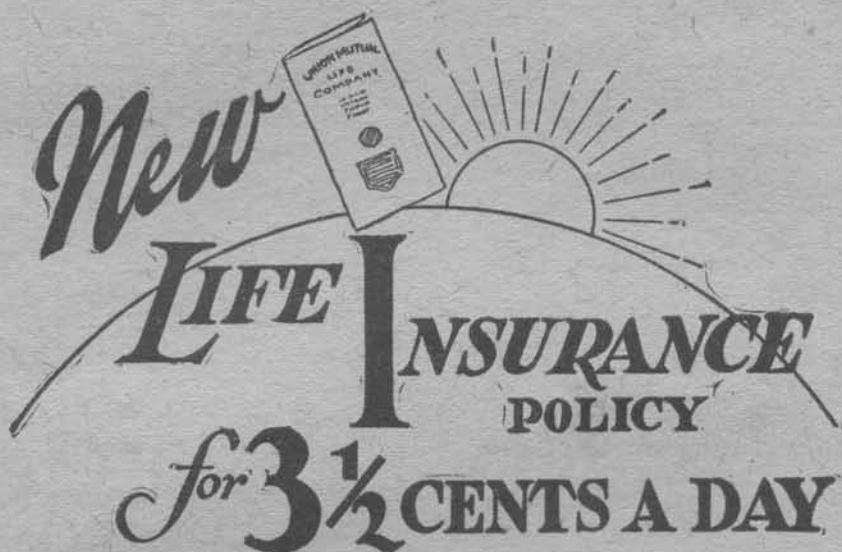
I am one of many on this side of the ocean who avidly reads your magazine. There is one story however, I shall not read. It is a pity, as I believe it is up to the mark of the best. But no self-respecting European could bring himself to read it.

I refer to "Cities of the Air" by Edmond Hamilton in the November 1929 issue of *Air Wonder Stories*. I can assure you that any European editor would have better taste than to publish any story, however brilliant, which had as its theme the fighting against and the beating of America by European forces. In having such bad taste, you voluntarily place yourself on a lower moral level than any European (and I hope, every other American) editor occupies.

Don't think this is a condemnation from me. I have no right to condemn, neither has any other man except yourself.

Victor Filmer,
17 Mellison Road,
London, S. W. 17, Eng.

(Continued on Page 1476)



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THE READER SPEAKS

(Continued from Page 1474)

(Ghosts, it seems, rise to haunt us. With our European readers avidly reading all past issues of our magazines, we cannot escape so easily from our sins. We must, of course, plead guilty to the sin. We must plead guilty to permitting Edmond Hamilton in this admittedly excellent story, to show up the possible future of warfare. To show that man is so blood-thirsty that he will carry war with him into the day and age when he should have outgrown it. We plead guilty to publishing such a story in the belief that it would help, as many modern war stories are helping, to create anti-war sentiment. We plead guilty to the belief that we should not say, "Hush, hush" when the question of war is mentioned. For "hush, hush" we submit is the method of the militarist when he wishes to manipulate very quietly the stage so that he can spring his war plans suddenly on an unsuspecting world. We plead guilty to all these things and throw ourselves on the mercy of the court, our readers.—*Editor*)

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Yellow With Age

Editor, WONDER STORIES:

Just received the April *WONDER STORIES*, and have finished reading it. It is one of the best numbers that you have ever put out.

There is but one story which I did not like. This story was "The Sargasso Monster". Edsel Newton is one of your poorest writers. Ed Earl Repp is your worst. I don't see why you continue to publish the stories of the latter. His style is the poorest that I have ever run across. And I have read quite a good many stories. The characters in his stories act unnatural. Most of his tales have poor plots. The romance in them is distinctly amateurish. He strives to be dramatic, but only succeeds in becoming ridiculous. The figures of speech in his yarns are time-worn and yellow with age. His language is stilted and hackneyed. In other words, he is the worst author that I have ever read. Practically all that I have said applies to Edsel Newton. The same goes

THE READER SPEAKS

for Lowell H. Morrow and H. F. Kirkham. Leave these four out, and I'll be thankful to you for the rest of my life. So will the majority of your readers.

The rest of the magazine was excellent. The last part of "The Return from Jupiter" was even better than the first. "The Emperor of the Stars" was the best story that the combination of Schachner and Zagat have produced to date. The best story, in my opinion, was "The Man Who Evolved." Hamilton is always an interesting writer. He is especially so when, as in the case of "The Man Who Evolved", the plot is different from his usual run. I should like many stories by Hamilton.

Why don't you have more illustrations by Paul? At one time, he was doing all the illustrations for three of your magazines. Now he is giving us only two or three of his superb drawings. Marchioni is a very good artist, but he does not come anywhere near Paul.

Michael Fogaris,
157 Fourth St.,
Passaic, N. J.

(There is very little that our correspondent leaves to Mr. Repp. At Mr. Fogaris' hands, Mr. Repp is pretty well destroyed. What do our readers think? Praise of Edmond Hamilton's "Man Who Evolved" seems to be pretty nearly universal.—Editor)

Moon Travel in 2050

Editor, *WONDER STORIES*:

Perhaps this letter doesn't deserve a place in your "Reader Speaks" column; as I am not planning to throw any brick bats or bouquets. I will, however, get something off my mind that I've been thinking about for some time.

A short time ago, I noticed a full page article in a local newspaper. The title read as follows: "ALL ABOARD FOR THE MOON IN 2050." The author was Frank Carlyn. I imagine that a title like this would catch and hold the eye of almost everyone; and it certainly did mine, as I am somewhat of a "bear" for articles which deal with interplanetary travel. That is, I devour everything I can get hold of which might enlighten, entertain, or what have you. Now, curiously enough, perhaps, the part of this title which attracted my attention first, was the first four figures, 2050! One hundred and nineteen years from now. Is this man trying to tell us that interplanetary travel won't become a reality until 2050?

The editors may snicker at this, and so may many of the readers (if they are fortunate enough to read this) but I actually had hope that someday I might roam through the vast stretches of interplanetary space, might even be among the first to set foot on our nearest neighbor, the Moon. Silly— isn't it? Still sillier—I think, even after reading that article, to hope that I shall have the chance yet.

Just why, Mr. Editor, should it take 120 years to develop the rocket ship (Mr. Carlyn stated that this was the only way known, of reaching the Moon, that deserved consideration) to a point where interplanetary travel will become a reality? I realize there are many difficulties, however. Many attempts will undoubtedly be made before a ship is built which will successfully span the gap which separates us from the lunar orb. The article stated that a speed of 10,000 miles an hour must be attained before travel to the moon is attempted. Perhaps 10,000 miles per hour is not so far away as some think. It seems to me that I heard of a gentleman, Dr. R. H. Goddard, who invented a fuel which would eject gases at a rate of 8,000 feet per second. About 90 miles per minute, or 5,400 miles per hour. Not exactly crawling, is it?

The author of the article stated that those living in this generation were asking too much of science to see interplanetary travel. Although that didn't upset my hopes, it made them sort of groggy. Asking too much of science—well, well.

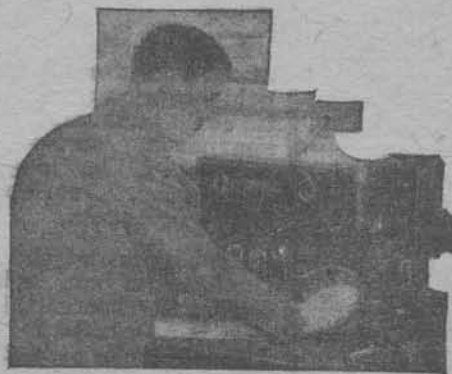
Thirty years ago, if you had spoken seriously of spanning the Atlantic in an airplane, non-stop flight; talking to a ship a thousand miles at sea by radiophone from your home; sitting in your parlor and seeing and hearing some sporting event which took place in another city, by television, you would undoubtedly have been branded a lunatic and put in the asylum for safe keeping. Yet the first has been ac-

(Continued on Page 1478)

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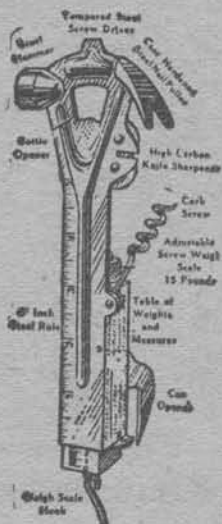
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BE sure to read the interesting announcement on page 1482 of this issue—it's well worth spending a few minutes to read it.

THE READER SPEAKS

(Continued from Page 1477)

accomplished several times; the second is an everyday occurrence; and the latter is fast becoming a reality, although it is still what you might call an "experiment". Now why couldn't science adapt itself to overcome the obstacles which stand in the way of interplanetary travel in the same way that it has accomplished its other wonders? It may take longer than thirty years, but I don't see why it would take one hundred and twenty. And too, if some of the millionaires scattered throughout the country, who lose a fortune now and then in Wall Street, would give some of this money to science (development of the rocket ship, etc.)—well, I'm sure it would help.

Yesterday I read an article by Kenneth W. Barr, "5,000 MILES AN HOUR IN A ROCKET PLANE." It was an interview with the German rocket expert, Fritz von Opel. (Oh! if there were only more like him). Opel states that in ten years we will be hurtling through the air in rocket planes at a speed of 5000 miles an hour. Hourly rocket plane service will be maintained between Europe and United States. The awkward Zepps will have passed out of existence; as being too slow and clumsy—also dangerous! Then why, Mr. Editor, would it be asking too much of science to see interplanetary travel in 1950 or 1980?

One thing, it seems to me, is quite evident. That when 5,000 miles per hour by rocket planes does become a reality, it will be due to the efforts of German inventors like von Opel. That will be nice, won't it? That is, unless American scientists take more interest in the future of rocket travel than has been shown heretofore. (At least so it seems to me—I may be wrong.) Maybe that will happen—eventually.

H. W. Lawton,
R. No. 1,
Lincoln, Nebraska.

(Mr. Lawton's desire to roam interplanetary spaces is not at all silly, and if it is then hundreds of thousands of men and women are equally silly. From the letters we receive and opinions we hear, the desire to explore new lands, and see new sights resides in the hearts of all persons with a spark of imagination.

However, we must temper our enthusiasm with caution. Conquering the interplanetary spaces is no simple problem such as building a machine to fly in the earth's atmosphere. The problem is one of a new order, dealing with the great spaces, with tremendous distances and tremendous velocities. The velocity necessary to fully escape from the earth is 6,664 miles per second or nearly 24,000 miles per hour. We must deal with huge quantities of the most powerful and explosive of fuels, we must provide equipment to exist in interstellar space and possibly to exist on the hostile and alien moon or another planet. These difficulties challenge all of our ingenuity and inventive skill.

There is no doubt but that when more and more scientists become attracted to the interplanetary question, that the difficulties will be levelled faster and faster. But there is no predicting today how soon they will be solved.—Editor)

Cold Blooded Scientist

Editor, WONDER STORIES:

This is my first letter to you (but not the last, I hope). Though I have read your science fiction magazines for three years, and with this as my only excuse for my temerity, I trust that this epistle will appear in print, if it doesn't disappear in the waste basket. Horrible fate!

First I wish to reply to the letter of Miss Carmen McCabe, which appeared in the August 1930 issue. Though of the same age as Miss Carmen I do not see why she should object to "super-steam-shovels" and "twenty-foot ants". These things are not impossible. Also, at any moment the earth is liable to be pounced upon by a people from another world, perhaps far superior to us in brainpower, and to defend ourselves in such a crisis our authors must go on "conceiving so many different ways of making a kill," for scientists to work upon. "What kick", she asks, "does one get out of reading a lot of numbers?" I reply that people and students (such as myself) who are interested in science, get a tremendous kick out of those same numbers and formulae. Also I greatly delight in reading and studying the ingenious ex-

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THE READER SPEAKS

planations of the many inventions and it is a constant source of wonder to me why many have not been put on the market. I would much rather read and "consume atoms and molecules and gravitation-al-something-or-other," (you do get knowledge from those) than what Miss McCable terms "Romance".

Personally I am all for the "cold and calculating scientist" equipped with fully explained devices and many adventures on alien worlds, but please go easy on the love-bosh.

Now about "our" magazine. It is excellent. We have no science fiction mags over here. Why not have someone write a story about Uranus, Saturn, Pluto, or Mercury? Because they are excessively cold or hot, doesn't mean that they are incapable of sustaining life of some sort or other. (Please ask some capable writer to see what he can do about it.)

In conclusion may I repeat my request for stories with plenty of science and action, but please avoid the "Romance" type. "Naomi" left me cold. There are many six-penny or (whatever your equivalent in cents is) magazines on sale containing Love and Romance and if Miss McCable wants the stuff might I suggest that she buy those and leave **WONDER STORIES** to the scientifically-inclined. I should hate **WONDER STORIES** to become a love magazine.

Because of the difficulty in obtaining "our" mag, can you tell me of anywhere where I can get copies (near Manchester, please) Thanks for your help. Forgive me for imposing my obnoxious communication upon you.

H. R. Hand,
339 Routhdale Road,
Manchester, Lancashire,
England.

(An echo of the "romance vs cold-blooded scientists" appears in this letter from England. Mr. Hand leaves no doubt as to where he stands on the question.

For his information an excellent story of the planet Pluto appears in the Spring 1931 **WONDER STORIES** Quarterly, by Stanton Coblenz. It is called "Into Plutonian Depths." It will be on sale about April 1. Hachette et Cie, 3 LaBelle Sauvage, Ludgate Hill, E. C. 4, London, England, is our English agent and can provide all readers in the United Kingdom with our magazines.—Editor)

Magnetism Through a Vacuum

Editor, **WONDER STORIES**:

I am an ardent reader of your discussion columns and have a puzzling question to ask.

In the March issue your illustration of the rocket principle—the sketch of the gun being discharged in a vacuum jar—you have the gun suspended in the center of the jar by a string.

Now admitting that the recoil or rocket principle causes the gun to move, as soon as the recoil force has been spent the gun will return to its original position in the jar. Now what causes this return? You say gravity. But the gun is in a vacuum or suspended in absolute nothingness. Then what medium does gravity act through in order to act upon the gun?

Or comparing it with magnetism—will magnetism act through a vacuum? We have a steel pin a vacuum jar, will a magnet in that jar attract the pin? Yes—but through what medium—for a vacuum is nothingness.

Richard Lord,
228 Pleasant Ave.,
St. Paul, Minn.

(The question that Mr. Lord puts is one of the most puzzling to science. We know that electromagnetic energy reaches us across a vacuum of interplanetary and interstellar space. Scientists felt for a time, that a medium was necessary to permit the travel of this energy, and the ether was invented—the ether being assumed as material which penetrated all space and all other material. But the ether theory has practically broken down and we are again forced to search for a reason why emptiness can be bridged by energy. If electromagnetism were the emanation of minute particles of energy and if all material bodies (sources of gravitation) emanated

(Continued on Page 1480)



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THE READER SPEAKS

(Continued from Page 1479)

this primal energy then the nature of electromagnetism and gravitation both might be solved. But at present no one ventures an authoritative answer to this perplexing question and one guess, practically speaking, is as good as another.—*Editor*)

Better Than "The Rescue"

Editor, WONDER STORIES:

Here is my vote of stories for the March issue of Wonder Stories:

1. "The Return From Jupiter." Better than "The Rescue From Jupiter."
2. "Back To 20,000 A.D." A lot better than "In 20,000 A.D."
3. "The Terrors of Aryl." Mr. Starzl's best.
4. "From Out of the Earth." I wish you could have a Repp story in every issue.
5. "The Green Torture." Let's have more and longer stories by this author.
6. "The World Without Name." Very interesting story.
7. "The Synthetic Monster." Not as good as most of Mr. Flagg's stories.

Below is my vote on the illustrations:

1. The Return From Jupiter.
2. The Green Torture.
3. The Cover Picture.
4. The World Without Name.
5. From Out of the Earth.
6. The Terrors of Aryl.
7. The Synthetic Monster.
8. Back to 20,000 A.D.

Jack Darrow,
Chicago, Ill.

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which will carry you to three worlds in search of the secret to that most potent and powerful of substances.

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ALL THIS AND MORE IN
JUNE WONDER STORIES
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(Mr. Darrow is one of our most persistent critics, and his analysis of each issue is very helpful, being brief but pointed. We judge that he had great difficulty in picking the best story from the March issue. From readers' reports it was a good one. There are many more to come!—*Editor*.)

THE READER SPEAKS

What Can A Girl Know?

Editor, *WONDER STORIES*:

Practically all of your letters, I noticed, were from men who obviously stand alone in their interest in science and I suppose they will say, "Pooh! What can a girl know about science!" Correct, I don't know a darn thing, or rather, I didn't.

When I first purchased one of your magazines, (purely out of curiosity), I had absolutely no knowledge whatsoever of the scientific world. My curiosity led me into a truly delightful realm.

On the surface the stories appear to be "stuff and nonsense" but throughout all there is a foundation of sound reasoning coupled with present day facts. I have had no education beyond junior high school but, due to your *WONDER STORIES*, I have gained sufficient knowledge of any subject in science to hold my own with others who have had the advantage of more schooling than I.

The so-called slush is perfectly alright and, although I do not care for too much of it myself, I see no reason for your not continuing it for those that do.

So, with a glass of pure "grape-juice" (I am not to blame for its fermenting and turning into wine), I drink to the continued success of *WONDER STORIES*.

Miss Frieda Kolus,
3122 W. 56th St.
Cleveland, Ohio.

(We think that Miss Kolus is too modest for her sex. She must recall Madame Curie who gave to the world its first real knowledge of radium.)

Many of the successful researches in modern day astronomy have been worked out by women, and although they have done nothing spectacular to earn them first page newspaper space their work has been extremely necessary in solving many of the difficult astronomical problems.

It is safe to say that the future will see an increasing number of women engaged in science and making contributions of real value. We hope and believe that many of them will acquire their first interest and taste for science, and get their first realization of the tremendous adventure of science through the pages of *WONDER STORIES*. Perhaps Miss Kolus will be one of them.—*Editor.*)

Radiation in Interstellar Space

Editor, *WONDER STORIES*:

Due to the fact that I just received my January issue, this letter is reaching you two months late.

I disagree with your statement that a person would freeze solid and not explode out in empty space. Through experiment I have found that a vacuum is the best means of retaining heat in a body. An every-day example is the thermos bottle. The liquid is surrounded by a vacuum to prevent conduction of the heat. Conduction is the main factor in the loss of heat. In space that is done away with.

Radiation then is the remaining factor. I will cite an experiment to show that not enough radiation takes place to cool the radiating body quickly. I connected two Christmas tree bulbs (those coming eight in a set) in series with a twenty-five watt lamp and the house current. Then the glass of one bulb was broken, leaving the uninjured filament exposed. The other bulb was for a check. When the current was turned on the broken bulb did not light but the whole one did and so did the twenty-five watt. The reason the broken bulb did not fuse or oxidize was that the air around the filament conducted the heat away fast enough to keep the filament barely warm. This was ascertained when the lips were placed over the filament and a small current of warm air was felt.

My deductions were that the whole bulb lit because of the rarity of the air in it and because it was not radiating enough heat to cool the filament.

The same applies to a human body in space. The heat is constantly being replenished by chemical action. My opinion is that the body would not radiate enough heat to freeze the body. It is possible on the contrary that a person might become overheated but having no facts I cannot say.

What do you think of this theory?

Jos. Osofsky,
280 East Broadway,
New York.

(Continued on Page 1482)

Over the Mountains from Los Angeles



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THE READER SPEAKS

(Continued from Page 1481)

(A recent survey conducted by the American Interplanetary Society on the question of radiation of heat from a human body in interstellar space revealed the startling fact that the body would lose only 1-3 degree Fahrenheit of temperature each minute. It was discovered also that a ten degree drop in temperature of the whole body was necessary to kill the body, thus permitting a half hour of exposure to the absolute zero of space. This discovery seems to upset generally held beliefs, and is in conformity with the beliefs expressed by our correspondent. The experiment with the electric bulbs mentioned by Mr. Ososky is an interesting verification of this.—Editor)

Near to Disintegration

Editor, WONDER STORIES:

I wish to say a word about the letter of Victor A. Endersby which you published in the March issue.

The fine way in which he dealt with a very difficult subject is worthy of special mention and praise. I happen to be in a position in this community to know much of the troubles of my people, and I unhesitatingly say that in every case, so far, where I have known of divorce, separation or serious marital difficulties, the matter can be, or has been traced directly back to the excessive use of the life organs by one or other of the parties involved. Nearly all of the other difficulties have been directly traceable to that.

It is well known that too much of anything is not good for humanity, whether it be food, clothes or enjoyment. The principle is equally true of sex activities. Continence and a clean mind bring with them a zest for life and an enjoyment that is unknown to those habitually using their life forces for self-gratification to excess.

I may add that there is another custom connected with this question that to my mind unquestionably has much to do with disillusion in married life, and unsatisfactory married life, and unsatisfactory married relations. I refer to the obscene story, to obscenity in conversation and the manner in which obscenity has fastened its blackened hooks upon so many of the ideals that are truest and best in life.

Truly it is time we were awakening to the fact that self control in sex matters and pure beautiful ideals consistently upheld will do more than anything else to re-establish the American home which is so perilously near to disintegration.

Lovina S. Johnson,
Lysite, Wyoming.

(Our correspondent makes here a smashing indictment against married life. The letter of Mr. Endersby has created quite some comment, and the attitude of most correspondents is similar to that published in this letter. The question is of such importance that it deserves thorough study. We maintain laboratories to study the sex life of the androsiphila fly in the hope of obtaining valuable information that may be of use ultimately to man. But we hesitate to go to the fountain of information—the sex life of man himself. But future generations may realize that man is building a lop-sided civilization, if he investigates only the nature of inanimate or non-human things and stops short at the threshold of the most important object to him in the universe—himself.—Editor)

History Repeats Itself

Editor, WONDER STORIES:

By far the best short story that has appeared in this magazine during the past few months was Edmond Hamilton's powerful and gripping account of "The Man Who Evolved," in the April issue. Not only was the story exceptionally interesting to read, but it possessed one of the major attributes of all good science fiction—it set the reader to thinking.

Just what does the future hold for man? Is he destined to evolve into a mighty brain, a vast intellect, omniscient and omnipotent; but devoid of all sentiment, all emotion, all that is HUMAN—as we understand it today? Truly, the picture that Hamilton paints of future man is fearful yet fascinating; at once desirable and repellent.

But Hamilton goes even further, and suggests that mankind will ultimately revert to the protoplasmic slime from which he rose, thus completing a natural

THE READER SPEAKS

cycle. Our vanity prevents most of us from accepting the idea that the human race will some day disappear from this earth. Yet we have reason to believe that other worlds, now devoid of all life, once supported intelligent beings as supreme on their planet as mankind is on earth. But they vanished from the scene; their worlds roll on lifeless through space.

What assurance have we that cosmic history will not repeat itself?

Allen Glasser,
1610 University Avenue,
New York, N. Y.

(Mr. Glasser poses an interesting question for us. Certainly we have no assurance that as Bernard Shaw suggested in his preface to "Back to Methusalem" that we are not simply an experiment of nature. Nature gave us supremacy and is waiting to see what we do with it. If we fail, nature will, without compunction, replace us by a form of life more fitting for supremacy.—Editor)

Fortune Tellers Do This

Editor, WONDER STORIES:

Being a charter subscriber to your most excellent magazine and having been forced to go through the agonies of reading the time traveling stories you insist upon publishing, I feel compelled to enter upon the discussion of this subject.

Taking the view that time is like a river and that all the events that have ever happened or shall ever happen lie along its banks, isn't it perfectly obvious that time traveling never can or never will be accomplished, considering that no one from the future has ever traveled back to us.

This, to me, would indicate that in all the ages yet to come, no one has ever invented a time machine, therefore time traveling will never be accomplished by man. Some enthusiast may say that our time traveler missed our day and age, but I maintain that if such an event had taken place at any time in the past it would have taken a very prominent place in our folk legends.

I'll retract my above remarks to this extent—that if time traveling is ever accomplished it will not be to the extent of being able to establish physical contact with the peoples of the age traveled to. That is ridiculous. Our traveler will have to be content with what he can see, and fortune tellers have professed to be able to do this for centuries.

N. C. Prabst,
4272 W. 21st St.,
Cleveland, Ohio.

(Mr. Prabst, it seems, refutes his own argument. For if time travelers remained unknown to the age they visited, there would be no records to indicate that they appeared in our midst at any time in the past. Folk legends have certainly in various nations spoken of almost every conceivable thing as having happened, if they are to be believed. Mr. Prabst is right in hinting that fortune telling is a form of time traveling. No doubt an occasional fortune teller does have an intuition and makes a remarkably correct guess in reading the future life of a subject. We have no evidence to indicate that is more than a guess.—Editor)

A New Contest

Editor, WONDER STORIES:

Ed Earl Repp, Francis Flagg, R. F. Starzl, Gawain Edwards, Nathan Schachner and Arthur L. Zagat and others, all in one issue! Just imagine (as the science fiction picture goes) it, or better still buy a copy of the March issue of "our" magazine and see it for yourself. It seems like a miracle, but it's true. It's the issue of a lifetime. All those stars of science fiction (or sf., the abbreviation for science fiction adopted by the Boys' Scientifiction Club) in the same issue. What a break!

The issue gets away to a good start with Paul's cover followed up by the ever priceless editorial of Ye Ed. From there on the magazine is a pip. A perfect WOW! Edward's "Return from Jupiter" and Schachner and Zagat's "Back to 20,000 A.D." leave nothing to be desired. They are absolutely the most

(Continued on Page 1485)

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THE READER SPEAKS

(Continued from Page 1483)

amazing sequels and most thrilling ones ever published!

Let's have a lot more from Mr. Repp, too. His "From out of the Earth" was the best short story in the issue.

For a long time I've had an idea for a new type of contest for "our" magazine. Here it is (and I think you'll like it, readers. I hope so, at least.) A regular sf. story is published, in one issue, with an illustration and remarks on it by the Editor, the name and photo of the author being omitted. The contest is that the readers submit letters of five hundred words or less (for instance) stating why they think the story was written by Edmond Hamilton or some other author. I think it would be interesting to see how well we know our authors. Each always has some little characteristic that is possessed by himself alone. What do you think of it, readers?

The Boys' Scientifiction Club now has a Senior Section for Authors and other notables. Authors interested please write to Jim Nicholson, 40 Lunada Way, San Francisco, California for details.

Forrest J. Ackerman,
President-Librarian, the B.S.C.
530 Staples Avenue,
San Francisco, California.

(Mr. Ackerman's proposed contest is quite interesting and we are giving it some consideration. What do our readers think? They after all, are the court of final appeal. If we receive enough of a request for the contest we shall be very happy to run it. Tell us your opinion.—Editor)

Marks an Epoch

Editor, WONDER STORIES:

The current, April issue, of WONDER STORIES marks an epoch in the history of science fiction. For six months the magazine has been steadily progressing to an unsurpassable point. Each issue eclipses the preceding ones. And, what is more, every story is written by a headliner. I can hardly conceive of any further improvements. The magazine as it stands today is my ideal of the perfect mag.

But one thing: I sincerely hope that you will not contemplate discontinuing the book reviews. They are the only means that I have of keeping in touch with science fiction novels. I have followed many of their recommendations and I have certainly not gone amiss.

Now for a general criticism of this month's stories. In the "Emperor of the Stars," Schachner and Zagat have once more outdone themselves. These versatile authors are making science fiction history.

"The Return From Jupiter" is an appropriate sequel to its predecessor. I consider Mr. Edwards one of your most talented authors. Although he writes sparingly, he has the ability to produce a masterpiece each time.

Why doesn't someone construct a cross-word puzzle based on science fiction? It could be solved by those well-versed in the famous stories, authors and heroes.

Mortimer Weisinger,
266 Van Cortlandt Ave.,
Bronx, N. Y.

(It's too bad that we have reached the unsurpassable point. That gives us nothing to look forward to—except a brick-bat. We must constantly have the incentive of a new goal to reach.

For Mr. Weisinger's information, we understand that Science Publications is providing a means for science fiction lovers to obtain the famous science novels. An advertisement of this will appear in this issue of WONDER STORIES. For lovers of the stories of Gawain Edwards, and the Schachner and Zagat team, we anticipate having some news soon of some new stories that will delight our readers.

The cross-word puzzle idea is intriguing. If one of our readers sent in a good one, we would be inclined to print it.—Editor)

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BOOK REVIEW

QUAYLE'S INVENTION by John Taine, 450 pages, stiff cloth covers. Size 5¼x8. Published by E. P. Dutton and Company, New York. Price \$2.00.

John Taine is the pseudonym adopted by a rather well-known American professor of mathematics. Mr. Taine is no doubt an excellent scientist, but he is no less a master of exciting adventures. The present volume, for sustained drama and tremendous narrative power is one of his best.

To the reviewer the first chapters detailing the experiences of a young inventor marooned on a bleak and lifeless island by an avaricious banker, "for the good of humanity" are among the best in the book. Quayle's "invention" has been deemed by the banker of such tremendous power that Quayle would almost automatically, if allowed to produce it, become the ruler of the planet. Such a man, in the banker's opinion, must be done away with, and Quayle is left with several months' supplies on a sun-scorched island in the South Pacific. But Quayle struggles through and returns to civilization to upset the plans of the banker to use his invention for predatory ends.

Peculiar to Mr. Taine's method, no real clue of the nature of the "invention" is given until the story is in its last phases. Tantalizingly Mr. Taine hints at the power and scope of it, but its real nature remains in the background of the story a terrible monster of man's mind, an abortive creation of the human brain, possessed of unlimited powers for good or evil.

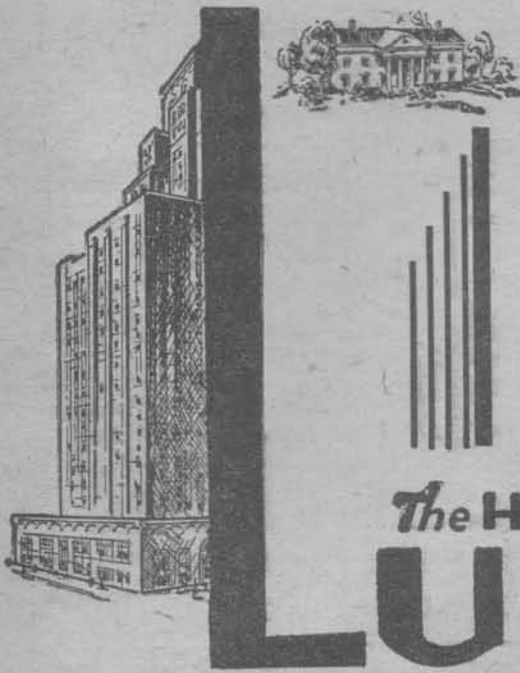
As in all of Taine's stories, the human motif is never submerged. The conflict of human beings working out their hates, jealousies, greeds and lusts take equal part in his stories with the play of cosmic forces. Both science and human plot are blended by Taine into an irresistible combination. The present volume is enthusiastically recommended.

IN THE BEGINNING by Alan Sullivan, stiff cloth covers, size 5¼ x 8. Published by E. P. Dutton and Company, New York. Price \$2.00.

Much of the purpose of science fiction is fulfilled in the portraying of two widely different types of civilization coming into contact and perhaps into conflict with each other. Civilization, we know, has been made possible by science or control over nature, and it is interesting and stimulating to read of the interactions of man clothed with science and civilization met face to face with his unclothed brethren. For then he can say, "There, but for the grace of science, goes myself".

Mr. Sullivan presents such a dramatic situation in this volume when he brings an expedition of scientists to South America to investigate the existence there of an area still in the Pleistocene stage of evolution. The expedition finds not only prehistoric animals—the saber-toothed tiger, the mastodon, the glyptodont, and others but also Pleistocene men and women who speak in clucks and have never heard of fire.

To portray such a situation needs great skill, and considerable imagination. Yet Mr. Sullivan achieves his effects remarkably easy, so it seems. The reader is constantly in a daze of wonder as he tries to associate these prehistoric men with the cultured scientists who have sought them out. It seems impossible to us, that we had once been as they. Throughout the story is woven an excellent, though not too original plot but it helps to sustain the interest and give our author the canvas on which to paint this most tremendous drama of inter-racial conflict.



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