

AMAZING STORIES

Quarterly

VOL. 2

OCTOBER 20, 1929

NO. 4

CONTENTS

The Bridge of Light	436
<i>By A. Hyatt Verrill</i>	
Euthanasia Limited	506
<i>By David H. Keller, M.D.</i>	
The Other Side of the Moon	516
<i>By Edmond Hamilton</i>	
When the Earth Grew Cold	556
<i>By Paul H. Lovering</i>	
Your Viewpoint	571
Editorials from Our Readers	572

Our Cover

this month represents a scene from the story entitled, "The Other Side of the Moon," by Edmond Hamilton, in which the scientist is shown on the moon, just after he has sent the ray up, and while he is attempting—despite the efforts of the turtle-men—to reverse the switch in order to enable his friends to return in the tube to the earth.

AMAZING STORIES QUARTERLY, published at 184-19 Jamaica Avenue, Jamaica, N. Y. Entered as second class matter at Jamaica, N. Y., under the act of March 2, 1879. Title registered U. S. Patent Office. Copyright, 1929, by S. F. Leo, New York. The text and illustrations of this magazine are copyrighted and must not be reproduced without permission from the editor. Full credit to the publisher, AMAZING STORIES QUARTERLY is for sale at all newsstands in

the United States and Canada. European Agents, S. J. Wise & Co., 40 Place Vendôme, Belgium. Printed in U. S. A.

AMAZING STORIES QUARTERLY is published on the 20th of January, April, July and October. There are 4 numbers per year. Subscription price is \$1.75 a year in U. S. and possessions. Canada and foreign countries \$2.00 a year. U. S. coin as well as U. S. stamps ac-

cepted for foreign coin or stamps. Single copies 65 cents each.

All communications and contributions to this journal should be addressed to KATLER AMAZING STORIES QUARTERLY, 531 Fourth Avenue, New York, N. Y. Unaccepted contributions cannot be returned unless full postage has been included. No inv. are guaranteed. ALL accepted contributions are paid for on publication.

EDWARD LANGRISH PRINTING CO., INC., JAMAICA, N. Y.

When the Earth

By Paul H. Lovering

"NECESSITY," it is said, "is the mother of invention." Just how true this statement is can be judged by the fact that almost simultaneously with the realization of some certain need, we hear of a new invention to answer that need. In this age, machines and mechanical devices for labor-saving purposes hold the greatest sway. And more and more man is imi-

tating or perhaps duplicating Nature. We have oxygen in tanks to sustain life in airtight submarines. We have "bottled sunshine" for cures. We are even talking of synthetic food and synthetic life. Can it be because we may sometime—perhaps in the far future—have a need for those things? And how far can we proceed without the aid of Nature?

Effective Chemicals

"THIS is the mechanism by which I hope to communicate with other worlds."
"Eustace Maynard, why waste your time on such absurd experiments?"

Professor William Brown of Covard University laughed the sting from his reproof.

"What is their value?" he continued. "From a scientific viewpoint, they possess a certain interest, I admit, but who would hop from this comfortable earth for Mars or Venus, when there is such obvious likelihood he would hop, at the same time, from this mortal coil—assuming," he hastened to add, "that your efforts should be crowned with the success you anticipate and communication with other worlds really is possible?"

"Your own literary journeys into the future furnish the best justification for my work," Maynard rallied. "You prophesy that some day the earth will grow as cold and dead as the moon. Posterity then might be glad to record its last will and testament with thinking creatures on another planet."

"You have me there," the professor admitted. "I must admit I am a prophet who believes his own prophecies. Emigration from earth to some other world would be very desirable in the event, that our own sphere became a dreary, ice-shackled waste. However, that will not happen in our day."

He blew smoke rings toward the rocky top of the cave, in which the young millionaire, following an unhappy love experience, had immured himself while conducting his bizarre experiments. Memory of that episode in Maynard's life provoked a question.

"How's Miriam?"

"I've heard she and Bobby Winstead are not altogether happy, but that may be only gossip, of course. I've seen their little son. He's a beautiful child."

"Very beautiful," Brown acquiesced. Then, after a pause: "Do you know, Eustace, I think you are doing yourself an injustice. You should come out of this strange, air-light cave and mingle with the world. You are wasting your life here."

"I can't agree with that statement. I prefer research and solitude. Why should I mingle with the crowd if I prefer to be alone?"

"You have certain duties to society. If nothing more, you should dissipate a larger portion of your increasing wealth." Brown tempered his remark with

a smile. "Further, while solitude works changes in men, it never yet has proved a balm for the heart."

With obvious intent to shift the conversation, the younger man directed attention to a massive iron cylinder, only partially concealed behind heavy hangings. It was conical in form and pierced by three openings, two windows at about the height of a man and a door near the base.

"There's the messenger I intend sending to some other world."

"I didn't know you had gone so far in your experiments. Can you really overcome the pull of gravity on such a huge mass?"

"Were the proper chemicals united in combination in its base, it would smash its way through the rock above and speed into the unknown at a rate as fast as that of light. I intend to launch it within a week but, needless to say, not from my favorite cave. I have selected another spot on this estate, where I still will be free from prying eyes. The cylinder will be freighted with communications and instructions in geometric code, which will enable the inhabitants of any sphere on which it falls to send it back to earth, provided they possess mentality and some scientific knowledge."

The professor examined the massive mechanism with interest and respect.

"Why not send an emigrant in it?"

"That would be possible. It's large enough to accommodate two or three persons. But, I might have some difficulty finding a person willing to make the jaunt. I couldn't guarantee a round trip."

Brown nodded and indicated a large glass cabinet filled with jars.

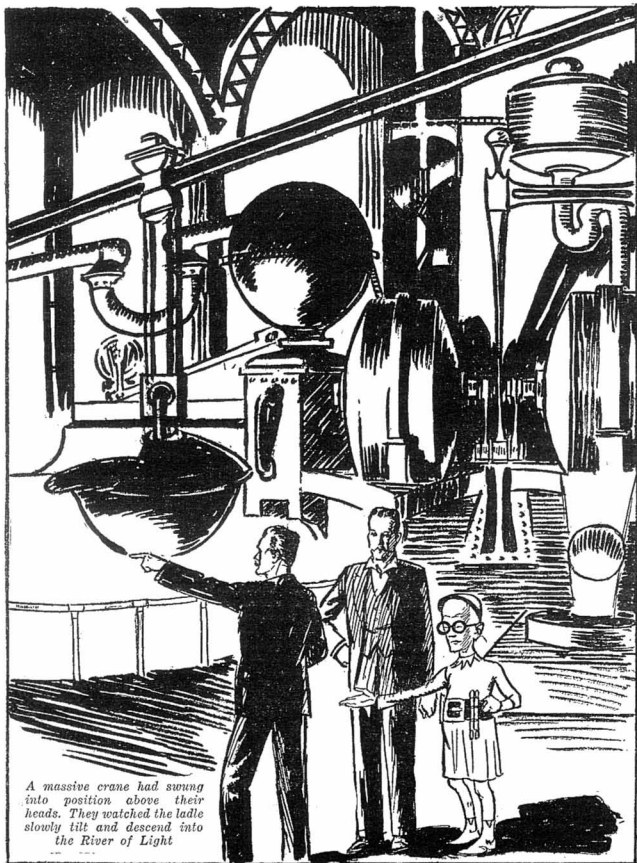
"You guard your chemicals with great care."

"Naturally," Maynard replied, drily. "I rather like this cave and have no desire to see a section of it go sailing off into space. Furthermore, the chemicals have an inexplicable power of suspending animation, and, at the same time, arresting decomposition. I discovered this wholly by accident. I really believe they would maintain life in the body for an indefinite period without any physical change."

He directed a strong light on a sealed cabinet resting on a rocky ledge. In it reposed two dogs, seemingly asleep.

"Do you recognize Rex and Queen? To all intents and purposes, they have been dead more than four years. However, I am confident both will come out of that sealed coffin alive and as well as the day I

Grew Cold



A massive crane had swung into position above their heads. They watched the ladle slowly tilt and descend into the River of Light

locked them in and put them to sleep with my chemical."

HE snapped the seals on the box and lifted the glass top. A pungent odor swept into their faces. For interminable seconds, the limp forms exhibited no signs of life. Abruptly, Queen's ears quivered and, at the same moment, Rex opened his eyes, drew a long, gasping breath and tottered to his feet.

"Resuscitated after four years of apparent death!" exclaimed Brown. "This is the age's greatest miracle."

Eustace patted Queen and the dog lurched to its feet. A moment later, she leaped from the casket and joined Rex, who was slowly trying out unaccustomed muscles in hesitating journeys around the cave. The men watched silently as the animals moved about the place, visibly growing stronger each second.

"Rex!" Maynard called.

The handsome creature leaped up and placed both forefeet on his chest. Then, with joyous bark, it raced up and down the cavern.

The dogs, every nerve aglow with vitality, simultaneously sprang toward him. One heavy body collided with the glass cabinet in which they had been confined during their years of slumber. It toppled from its resting place.

"Catch it, professor! Don't let it hit the chemical cabinet!"

Maynard sprang forward to avert the catastrophe. Too late! The massive casket smashed its way through the glass of the cabinet. There was a mild explosion.

"Run!" Eustace gasped, stumbling toward the cave entrance.

An iron door barred his way. Madly, he clawed at familiar locks, his brain numbed by the sweet, pungent odor that filled the apartment. Despairingly, he glanced behind him. Brown had sunk to the floor, his face calm and peaceful.

"What have I done?" he murmured despairingly, head sinking upon chest.

Still clutching vainly at the door fastenings, he dropped to the rocky floor. Silence reigned in the cave.

The Awakening

MAYNARD was awakened by a heavy shock. He stretched out his hands to brace himself and touched something soft and warm. How tired he felt—not exactly tired, either, but disinclined to exert himself sufficiently to open his eyes. After a long pause, he rolled over and slowly raised reluctant lids. The cave was filled with subdued light, reminiscent of moonlight but less metallicly silver in color. Still drugged with sleep, he pieced together the memories stirring in his unsteady brain. This was his workshop, but what was that jagged opening in the cave wall, through which poured the soft radiance? Who was the sleeper by his side? He stirred unwilling muscles and dragged the man into the light.

"Professor Brown!"

The familiar countenance of the Covard instructor brought a flood of recollection.

"What happened after that chemical explosion?" he murmured aloud.

He ran a hand perplexedly through his hair. Fine dust rained over his clothing.

"Heavens only knows how long we slept. Perhaps, it was for days."

The professor flung out his arms and opened his eyes.

"What a dream!" he yawned, lurching to his feet.

"I seemed to see centuries pass in procession."

He rubbed sleep-heavy lids.

"It was all so confoundingly real, too," he added. "Where are we? Oh, I remember, now. That infernal stuff of yours exploded and the fumes overpowered us."

He peered about uncertainly.

"Let's get out into the sunshine. No more experimenting for me!"

He aroused the dogs while Eustace hunted the iron portal. It had disappeared. Only jagged rocks met his fingers.

"The door has disappeared," he announced, a queer catch in his voice.

"Impossible! Only an earthquake could have wrecked it."

"I was awakened by a shock. It may have been a slight earthquake. That opening up there is new. I never saw it before."

"One way's as good another," Brown grumbled, good-naturedly, "so long as it leads to breakfast. I'm famished."

He clambered on a pile of small rocks and dirt, thrust his head through the ragged opening and, after a pause, called back over his shoulder.

"I can see sunlight in the distance. The cave mouth is not far away."

Eustace hoisted the dogs through the opening and climbed out himself. They found a rough and uneven pathway, which descended steadily.

"That earthquake evidently opened up new caverns, of which we had no previous knowledge," Brown remarked. "This will make an interesting addition to a paper describing your discoveries and our experiences."

Rex and Queen, who had ventured far ahead, could be heard barking, the noise reverberating as though echoed on and on for a long distance. The men came to an abrupt turn in the narrow passage. The light had grown visibly brighter.

"We are nearing the entrance," the professor asserted confidently.

He stepped out briskly and a moment later, Maynard heard him calling to the dogs.

"Every hair on their bodies is standing up straight," he explained, over his shoulder. "What's the matter, Rex? Get it!"

The animals howled dismally.

"Confound it, shut up! Eustace, the dogs have lost their nerve as a result of your devilish experiments."

He moved on again, Rex and Queen trailing Maynard's heels. The light grew brighter. Another turn in the narrow cave and Eustace bumped into the tense form of his friend.

"What's that?" the latter exclaimed in a low voice.

Maynard stood on tip-toe and looked over Brown's shoulder. They were standing at the entrance of a vast cavern, seemingly deserted but flooded by the soft, dull brilliance they had mistaken for daylight.

"There!"

The professor pointed with trembling finger.

"What's that?"

Through the center of the cavern raced, at indescribable speed, a river, not of water but of luminosity. It broke in a spray of light against rocky banks, eddied about projecting boulders and swept into the distance, as far as the eye could follow it, a flood of golden brilliance.

"A river of light," Eustace gasped. "Am I dreaming?"

"One more sniff of your chemicals and we would be

seeing pink elephants," Brown commented, caustically. "Wait a minute! Do you see something over there—among those giant mushrooms?"

"It can't be true, of course, professor—but they look like human dwarfs."

The rank, white vegetation seemed alive with forms. From behind the giant stalks, pygmies darted out to the number of two score or more.

"We took one pinch too much," Brown groaned. "We passed the pink elephant stage."

The little men advanced rapidly. They were slenderly formed, with capacious heads, attenuated bodies and slender limbs.

"If all this is not a dream," the professor exclaimed, "I'm a fit subject for examination by a lunacy commission."

One of the dwarfs, more venturesome than his fellows, pulled at the speaker's sleeve. The educator gingerly fingered the flabby little hand. Doubt gave way to astonishment.

"They're real, Eustace."

He turned an amazed face to his companion.

"This is the greatest discovery of the generation! We have found an unknown and buried human race!"

A dwarf, who seemed the leader of the strange crew, motioned them on through the fields of wraith-like vegetation, toward the luminous river.

"It flows with amazing speed," Eustace remarked, "yet makes no noise."

Brown nodded assent but whispered a warning.

"I don't like the looks of these little chaps."

"Neither do I, but they don't seem to be armed."

THE professor paused to examine the strange vegetation through which they were passing.

"I am tempted to believe they are cultivated. Note the regularity of the rows. We must be crossing a farm of this amazing people."

"You may be right, professor, but I should feel more disposed to scientific observation if I had any idea where we were going."

"That's right," Brown ejaculated, his booming laugh resounding hollowly through the cavern. "For the moment, I was so interested in our amazing discoveries I forgot breakfast. I wonder where these little rascals are leading us."

"I'm anxious to find an exit to the surface and the way they indicate seems to go deeper into the cavern."

They shot rapid-fire questions at the dwarfs, exhausting their knowledge of languages and even resorting to signs without avail. The pygmy leader went ahead impatiently to the brink of the luminous river and beckoned.

"We can be in no greater danger there than here," the professor argued. "Let's see what he wants."

Below them, the brilliant flood eddied and boiled. Scintillating haze floated over the gleaming mass, from which subdued light radiated.

"Reminds me of a mist such as one observes at times hanging over a large body of water on a clear, hot summer day," Brown observed.

"What do you suppose it is?"

The Covard instructor thrust his cupped hand into the flood.

"Whatever it is, it's warm."

He lifted his hand. It was empty. Only a gentle radiance surrounded it for a moment.

"Odd! Very odd!"

He dabbed in the stream again but abruptly snatched out his fingers and shook them frantically.

"That time it burned! What do you suppose made it do that?"

The dwarfs, with impatient thrusts, now urged them downstream.

"It's time we decided our course," Eustace declared. "Their intentions may be friendly but, frankly, I don't like the looks. Shall we go with them and take chances, or shall we turn back?"

Another party of dwarfs emerged from the rank white vegetation. Several carried bundles.

"There is one of their women, Maynard. Not bad looking, either."

The girl paused as she came opposite them. Something in the proud poise of her beautiful head reminded Eustace, for a bitter moment, of Miriam, the woman he had loved and lost. She seemed almost of a different race than her companions, being taller and apparently superior mentally. Abruptly, she broke through the ranks surrounding her, jostling one of the newcomers so the contents of his sack were flung to the floor. Brown recoiled in horror.

"The miserable little runts are cannibals!"

Eustace thrust aside detaining hands and started back over the path they had traveled.

With a gasp of horror, the girl caught at his hand.

"Save me!" she pleaded. "These creatures captured me and are carrying me to their own caverns."

Amazement at hearing familiar speech under these astonishing circumstances was subordinated to the need for action. The dwarfs seized the girl, but they were flung aside by Maynard. Sheltering her with their bodies, the men retreated from the river bank. Instantly, the pygmies attacked. Small, clammy hands clutched at limbs and clothing. A thrust was sufficient to send an assailant reeling, but their numbers were formidable. Eustace, beset on every side, staggered and would have fallen had Rex and Queen not, created a diversion by charging the pygmies, slashing at their attenuated legs with sharp teeth and filling the cavern with angry baying.

Maynard and Brown at first had made every effort not to injure their foes, who seemed unarmed, but the labor of flinging off their insistent bodies was exhausting. Eustace caught up one of the men and whirled him like a club. Those smitten by his frightful weapon did not clamber so nimbly to their feet. The attack slackened.

"I believe we've whipped them," he gasped.

"Great Heavens! Eustace, look behind you!"

Another party, as numerous as the first, had dashed from the mushrooms.

"Smash 'em!" cried Maynard, shaking his terrible club.

The new group passed to one side and the cannibals fled, several falling victims to the explosion of glass bombs hurled by the strange war party. The leader of the latter, a man above the average height of his people, approached the watchful little group. His face mirrored surprise and curiosity as he addressed the girl.

"Who are these two giants, Mir?"

He spoke a form of English, clipped and odd-sounding but intelligible.

"I do not know," she replied. "I was captured and they rescued me."

He drew himself up smartly and saluted.

"I thank you, on behalf of my people."

Curiosity broke through the restraint that seemed habitual with this strange race.

"Whence come you?" he demanded.

"From another cave," Brown replied, "not far away."

"Do others live there?"

"Not there, but millions more are on the earth's surface."

Amazement and unbelief were expressed on the soldier's face.

"Nothing lives on the earth's surface," he declared. The professor laughed.

"Only yesterday, I came from the city of New York, where several millions of people live very comfortably on the earth's surface."

"New York!" echoed the dwarf. "The great city of our fathers! It was destroyed in the upheaval of 16,002."

A Glimpse of the Surface

"NEW YORK destroyed! In 16002! Absurd!" The professor laughed, but the mirth died on his lips as the little man regarded him sadly.

"You are the last New Yorkers. Before the earth had grown cold, your great city was overwhelmed by a tidal wave. At least, so our traditions tell us. Nothing now remains of it save a memory."

"Impossible!"

The dwarf leader replied with a dignified gesture closing the discussion.

"The Thinker will tell you more."

He turned to Eustace, who had been studying the strange glass bombs suspended in a bandolier across his chest.

"They contain gas which induces sleep but does not kill," he said. "They are the only arms we permit ourselves and are effective enough against our sole foes, the cannibals you have seen. With the world slowly dying, we cannot bring ourselves to kill even such miserable specimens of humanity."

He indicated the direction whence his column had come.

"They raided one of our fields and carried off Mir, the Thinker's daughter. That is why we pursued them. But for your intervention, they might have vanished in their distant caverns, with which even we are not acquainted. Before you return to your own caves, may I extend hospitality to you and your companions?"

"We shall be pleased to accept, particularly if you will show us a way to the surface."

The dwarf smiled.

"I know a way. Follow me."

As they turned into a beaten path paralleling the course of the mysterious river, Mir caught Maynard's hand, pressed it to her lips and fled on ahead. They had entered a narrower passage, at the bottom of which the river tossed and whirled in silent, iridescent majesty. They could see to the rugged ceiling, composed of many down-hanging points of rock, gilded by the soft radiance emanating from the mysterious stream. At a point where the cavern walls came down almost to its banks, a detachment of their escort stopped, but the remainder of the command continued onward.

"How straight the channel runs," Eustace remarked. "One would think its bed had been cut from the solid rock."

"I can hardly conceive of these dwarfs carrying on such a tremendous project."

"They may not have been so small," Maynard replied, with a whimsical smile, "when they entered the caves."

"You don't believe their absurd stories about the destruction of life on the earth's surface," Brown exclaimed. "I don't."

"I hardly know what to believe. The story seems absurd, but it is no more fantastic than ours will be."

"I'll be glad," the professor sighed, "when we get out of this place."

"So will I. For the moment, we can only go on. Our host is friendly. Think what a paper you will have for the next meeting of the National Anthropological Society. A lost race of whites, inhabiting these amazing caverns and speaking English. It will startle the scientific world."

"I see you agree with me that his story about the destruction of life in New York is a weird dream."

"I know that I hope it is."

"Eustace, it's impossible!"

Brown's mellow laugh filled the cavern with echoes. "I'm willing to admit the whole thing is puzzling," he continued, "but the fact we are here is proof there is nothing to the idea that the world has grown cold."

"Yet, you once predicted such an end to all things mundane."

"Agreed, but you will recall I added nothing of the sort could happen in our day."

The cavern had opened out separately, its further extreme cloaked in shadows. They were passing again though long, orderly rows of mushroom-like growths.

"These, I presume, are your fields," said the Coward instructor to their guide.

"Yes."

THE man's manner suggested a suspicion that the speaker was jesting. Brown changed the subject. "Have you a name for this odd stream, this river of light?"

"That is its name—the River of Light. Have you nothing like it in your caves?"

"No."

"How do you obtain light and heat?"

"From the sun, of course."

"The sun? Has it again commenced to give off light and heat?"

Doubt and pitiful eagerness were mingled in the question.

"So far as I know, it never ceased giving off both."

The little man flung a question at him.

"What year do you think this is?"

"Why, A. D. 1938."

The dwarf laughed shrilly.

"This," he cried, "is A. D. 28,989."

"Preposterous!" Brown exclaimed.

For the first time, their guide displayed resentment. "Among my people," he said sharply, "liars are unknown."

"I do not question your veracity," the professor hastened to explain. "However, my companion and I went to sleep on August 26, 1938. We woke up to-day. If what you say is true, we have slept—Merciful Providence!—We have slept more than 20,000 years."

"I do not know how long you have slept or if you have slept at all," the little man replied haughtily. "Nevertheless, I assure you that this is 28,989, according to the computations of time in use from the earliest days of the American people."

"You speak of the American people—who are your people?"

Their guide raised his head with melancholy pride. "We are the last Americans."

"We, also, are Americans. If what you say is true, we are the sole survivors of our branch."

"There are none others in your cave."

"Not one."

"You once lived on the earth's surface?"

"We were born on the earth's surface and lived there until we went to sleep in August, 1938."

"Earth then was habitable? People lived on its surface?"

"Yes."

The little man threw up his hands in a gesture of despair.

"This matter is too deep for me. We must place it before the Thinker. For more than 12,000 years, this has been the sole home of the remnant of the American people. In those savages you met a short time ago, you saw all else of humanity that is left in the world, so far as we are aware. You two, alone, possess the stature and general characteristics of our ancient race."

He paused a moment, in deep thought.

"Greater men than I must take up the tale. However, to convince you that I and they speak the truth, you shall look upon the outer world, where you once lived."

He turned aside into an inclined path that wound round and round, as though they were ascending a massive stone column in the manner of a spiral staircase. Presently, they came to a flight of steps, each so high their guide had trouble mounting them.

"They were heaved from the living rock by men of your stature," he explained.

A feeling of unreality, mingled with foreboding, weighed down the others. They were silent as they toiled upward interminably, pausing occasionally to regain breath. A tiny light-stream, a mere trickle compared with the river below, leaped and glistened beside them, illuminating the never-ending stairway.

"When you tire," their guide observed, "we will rest. It is some distance to the top."

For the first time, they heard the subdued clank of machinery.

"You hear the light condensers," the little man explained. "You will see them in a few moments."

They entered a spacious cavern filled with shining machinery, all in smooth, even motion. With little vibration, giant wheels turned in constant revolution and heavy bars rose and fell. They were amazed to observe the proportions of the mechanism. It towered above them. Their guide shouted and a thin, clear voice answered. High up in the maze of ironwork, they saw a moving dot.

"He is the Master Mechanician," the dwarf explained. "His whole life is dedicated to the task of keeping this machinery operating. By it, we are enabled to live. Were it to stop, we should die. These condensers supply the light that constitutes our source of heat, illumination and power, and also a sufficient amount to counterbalance loss due to earth absorption from the River."

Beneath the massive base of the machinery opened a pit. Peering down, they saw the iridescent stream, racing in a haze of brilliant spray over its rocky bed.

"Around this well is built the stairway we ascended. Through the pit we supply the stream."

A massive crane had swung into position above their heads. Its ponderous ladle slowly tilted and from the lip descended a stream of light. They watched the glistening trickle strike the river, sending up a brilliant mist spray.

"Here is the center of all the world's present life," their guide continued. "It is the pulsating heart of things, as we have known them for thousands of years. Were this machinery stilled, we should not survive long."

"I do not understand this River of Light," said the professor. "Is it liquid sunshine?"

He smiled as he asked the question.

"What it is is as much mystery to us as electricity

was to your generation," the dwarf replied. "You had it, but only vaguely identified it as a force. We have this and know it as the River of Light."

He motioned them to a stone bench.

"YOU will understand more, perhaps, if I tell you that our scientists discovered the action of solar energy, concerning whose nature, as I remarked before, we know as little as you knew of electrical energy. They ascertained that this energy, in small quantity, was imparted during the day to the gaseous molecules of the atmosphere and, still more moderately, to the solid elements of earth. They also found it was the growth basis of all terrestrial life."

"Interesting theories," commented Brown. "Could their truth be demonstrated?"

"They, and we, are satisfied that their truth has been established. Their next problem was to discover means of molecular or atomic fixation that would preserve this life-giving energy and then to effect its translation into liquid form, because this was the obviously practical means of transportation through our caverns. Necessity, in all times, has been the father of inventive achievement. The means was found. A rough parallel between our problem and its solution may be found in your achievement of liquid air. The result, in our case, was the River of Light."

"How long does this process of fixation persist?" the professor queried.

"At first, the loss through earth absorption and atmospheric dissipation was enormous. However, succeeding generations of scientists perfected the application. As you may suspect," said the little man, with a melancholy smile, "time is nothing in our calculations. When a race is doomed and knows it is doomed, it does not spare effort to stave off annihilation."

He paused a moment, as though in meditation, and then continued.

"A certain degree of saturation has been reached in the earth's surface contiguous to the stream course through our caverns. Now, the absorptive loss is more or less established. Also, improved processes retard disintegration of the finished product as you see it in the River. Still, the percentage is formidable, particularly when the failing energy of the sun and our own steadily diminishing numbers of available workers are considered."

He rose and led them to a tall metal ladder, up which he clambered. They followed, finding some difficulty in accommodating their steps to its closely spaced rungs.

"We built this," he said, pausing at a landing. "You will observe it is not on so gigantic a scale as the machinery or the stone staircase."

The ladders seemed interminable, the platforms never-ending. Everywhere they observed silently whirring machinery and occasional workmen. Their guide paused at the bottom of a huge caisson.

"Step upon this movable platform," he commanded.

They were borne up swiftly into a triple-glassed chamber, similarly roofed and opening upon the surface of the earth.

"Why, it's winter!" exclaimed Brown.

"No," their guide corrected sadly. "If there were any important gradations of season now, it would be summer."

"But, everything is covered with snow."

"So it has been for thousands of years. The snow never disappears."

"But, when the moon goes down and the sun comes up, surely it must melt."

"The sun is 'up,' as you phrase it. That pallid orb

is the sun, which some of your ancient peoples worshipped, but none followed with such devotion as we."

"Do you mean to tell me that's the sun?"

"It is."

"Eustace, I was wrong," the professor cried, wildly. "What I predicted came true ages before I had believed it would be possible. The sun is going out and the earth has grown cold."

The Sun Is Fickle

STUNNED by the magnitude of the disaster by which they had been overwhelmed, Maynard and Brown stared at each other in hopeless dismay. "We have slept through ages, during which the world's most momentous events have occurred," the former declared, after a pause.

The dwarf regarded him curiously.

"Imagination cannot suggest even the slightest part of those changes," he said, gravely. "The green, fertile, warm and rain-washed earth you knew is dead. In its place is the cold, sterile waste you have just viewed. We, descendants of the few Americans who escaped the Great Catastrophe, are hopelessly fighting a losing battle against what we know must be eventual destruction by cold."

He indicated a majestic snow column that reared itself, clear and distinct, in the distance above the level white plain that spread out on every side unbroken by a tree, shrub or other vegetation.

"This is a relic of the last big building in the ancient city of Chicago. That plain formerly was in your state of Illinois. In the Great Catastrophe, when other structures of your and our people were shaken down, fate spared this solitary sentinel. It towers above a frozen world and is the last and only creation of man surviving the titanic upheaval. It will stand forever. The snow never melts and cannot increase, because there is no moisture in the air. No winds disturb it, for the air is as dead as the rest of the world. We have come to a day of unchanging things. Only the sun is fickle. It grows darker with each passing year and some day, it will go out."

"What then?" Eustace demanded, in a strained voice.

"For a few years, the River of Light will flow, furnishing a scant measure of light and heat to our underground people and plants. Daily, a small part of its flow will be absorbed by the greedy earth. The last fateful struggle for existence will be launched. In the end, the stream will grow so small, it will no longer support life. The earth will whirl through space, a frozen sepulchre."

"Horrible!" shuddered Brown. "Yet, entirely understandable."

"We have confronted this certain fate for years," was the rejoinder.

The dwarf spoke with sad assurance.

"At first, we revolted against nature's inexorable decree. We supported ourselves with vain hopes that the temporary darkening of the sun would pass, that its glad heat would burst forth in former intensity, that the world once more would grow green and joyous. Generations ago, scientists convinced us of the folly of that hope. We have been awaiting the inevitable for centuries. By condensing such light as we may, we keep the River up to normal and even have increased its flow slightly. That is our own great labor and our only hope of even temporary survival."

"Why have you not migrated to another planet?" the professor inquired.

The dwarf bent a pitying gaze on him.

"Has there been anything else so diligently sought

as the secret of overcoming gravitation? Generations of philosophers have labored at nothing else. Our scientists do nothing but experiment. Yet, we are as far from discovering a means now as we were in the beginning of our labors."

Eustace stroked his forehead to stimulate a sleeping memory.

"Before I went into the long sleep, I have a dim recollection that I discovered that secret."

The little man smiled skeptically.

"If you have preserved it, you have conferred upon the race such a boon as none other that ever lived has done."

Hope mastered unbelief. He caught Eustace by the sleeve.

"Do you remember?" he shrilled.

"Memory is hazy. Flashes of recollection come, but so many amazing events have occurred since I awoke, that I am confused. I must arrange my thoughts."

The dwarf sighed.

"You shall have time," he replied, preparing to descend. "Thinking is our sole occupation. We labor little. The mushroom fields furnishing our sole food require no attention. We do not attempt public works, because there is no need for them, as our numbers steadily are diminishing, we think—and steel our souls against the final hour of disaster, when the sun shall become dark."

They descended to the level of the mighty machinery, noiselessly continuing its gigantic labor.

"This work never ceases," their guide explained.

"During the day, which now averages seventeen and three-quarter hours, due to the slackening of the earth's pace, the condensers gather in the sun's light. During the long night, the product is given further treatment until it becomes of the fluid consistency you note in the river."

They had paused at the mouth of the staircase well and he pointed downward to where the strange stream swirled in a glow of phosphorescent radiance.

"The discoverers of the process made the fatal error of draining their first supply from the earth's saturated interior, because earth energy possesses added fertilizing power and, in early days, when our numbers were greater, the food problem was acute. Unfortunately, they did not realize that the earth would claim this back. When the reason for the excessive loss was learned, the sun had grown so cold it required all this machinery to obtain even the small amount of light we now are able to extract. The steady drain upon the supply continues. Ultimately, the earth would claim all, were we not able to replenish the River each day."

"What is your power?" Brown asked.

"Light. It may seem suicidal to consume the vital force in that way, but we have nothing else. Other fuel supplies were exhausted before the Great Catastrophe. For centuries, the race had been dependent upon hydroelectric power and sun heat. A surprisingly small quantity of light suffices to drive these massive machines, thanks to constant improvement in design."

He paused and a slow smile broke over his somber face.

"I have been derelict in courtesy in not introducing myself. Here, however, all are known to each other, we are so few in numbers. I am called Har."

The professor introduced himself and his companion.

"The custom of surnames became obsolete generations ago. We have no need for them."

"Why have your numbers decreased?"

"Intermarriage, inadequate food and the confined, inactive lives we lead. Children are few and are wel-

comed with rejoicing by all the people. The child is king among us. Yet, with all the care we lavish on them, the infantile death rate is lamentably high, while the birth rate declines. Should the sun be slow in going out, there may be no humans to mourn the world's death."

His face grew dark with thought.

"Possibly, it is best we should pass thus. Merciful Providence may be sparing man the final, dreadful battle for existence on a doomed planet."

Depressed by his somber words, they followed silently down the winding staircase.

The City of Har

THAT is the city of my people."

Har indicated a collection of stone houses extending over a considerable area. They had paused a moment, after a brisk walk from the Cave of the Light Condensers, at a gate leading through a high wall surrounding the strange municipality. A massive portal closed behind them.

"Here is the last civilized community of the race," he continued. "From excess of precaution, the forefathers surrounded it with this wall. Today, it needs no defense. A guard protects the city from the cannibal dwarfs. We have no other foes."

He indicated a well-shaped opening in the stone street, through which light streamed upward, breaking in a soft, diffusing glow on the cavern roof.

"The River illuminates and warms our caves. Through numerous channels beneath the city it reaches every home and is tapped by shafts from houses and streets."

He turned into a broad, deserted avenue.

"These buildings are empty. When the city was founded, all were needed. The number now vacant indicates how our population has decreased."

"Where are the present residents?" Brown asked.

"In the center of the community, where they gather for companionship. There are situated the few factories our needs demand. There also resides the Thinker, our leader."

News of their coming had gone before and the little people had gathered in a great central square to view the strange creatures who had so strangely entered their uneventful lives. None displayed either hostility or discourteous curiosity. The spirit of repression observable in Har was characteristic. All bore themselves as men and women over whom calamity had impended so long and so imminently that its menace had set an indelible seal on thought and character.

"I have not seen a single child," Eustace remarked.

"We protect them against every slight change of heat or cold," Har explained. "Our vitality is at its lowest ebb during infancy."

He paused before a massive structure facing a square.

"They are reared there, under the care of persons trained from youth to that vocation."

The slow, sad smile again wreathed his face.

"They are priests and priestesses of the race. Among us, only the Thinker is accorded more respect and he is merely the highest among them."

The dwarfs fell back courteously as they crossed the square. Brown observed all were attired in a double garment of close-woven texture, the women distinguishable only by the profusion of their hair.

"Mushrooms supply material for our cloth," their guide explained. "Patient selection of types resulted in a plant furnishing a good fiber. These matters are commonplace with us," he smiled, "and it is hard to

realize you come from an age so remote that they interst you."

They entered a larger structure, Har informing them, over his shoulder, that it was "built by men as tall as yourselves thousands of years ago." Through the broad hallway they advanced to a spacious chamber, now occupied by a silent, attentive crowd. The beautiful girl named Mir was standing at the farther end of the apartment near a stone dais. She smiled at Eustace, then averted her eyes. A man above the common height of the people arose from a stately chair as Har addressed him.

"Oh, Thinker, these are strangers, who claim to be representatives of our race, as it was before the Great Catastrophe."

The man on the dais bowed, although his face mirrored amazement and unbelief.

"Do you claim to be survivors of that terrible event?" he inquired.

Professor Brown replied.

"We are aware of the circumstance to which you refer only through conversation with our guide. It's all very unreal to both of us. All I can say is that we went to sleep in the year 1938 and awakened today."

A murmur ran through the assembly and a scowling, black-browed dwarf thrust himself forward.

"His story is absurd. We are not children to be tricked by such flimsy lies."

"That is Rab, son of the preceding Thinker," Har whispered. "He loves Mir, daughter of our present leader, and aspires to succeed him."

The man on the dais studied the newcomers thoughtfully.

"Strangers, we are an honest people. Liars are unknown among us."

He paused, as though to allow time for the significance of his words to penetrate. When he resumed, it was in a tone of dignified appeal.

"If there are others of your kind in the caves whence you came, we will welcome them with joy."

Brown replied with equal sincerity.

"There are no others. I have stated nothing but the truth, although the truth is almost too amazing for credence."

"Astounding!" the Thinker exclaimed.

He motioned for his chair to be dragged to the edge of the dais and directed them to be seated on the edge of the platform. The professor told the story of their incredible experiences.

"What is this mysterious gas which produced such prolonged slumber?"

He addressed Brown, but Eustace answered.

"I discovered it during experiments to solve the problem of overcoming gravitation."

A melancholy smile lighted the Thinker's face.

"Was emigration to another planet considered even in your day?"

"Far from it," Maynard laughed. "The world was too pleasant to tempt men to undertake such a useless journey. My experiments were wholly from a love of scientific research."

"We pursue the study for other and more pressing reasons. We have thought, for ages, of nothing except escape from earth."

He sighed.

"The first failure and the last meet here."

"It is not sure she failed!" Har exclaimed.

Faint hope shone in the Thinker's face.

"It is not possible," he cried, "that the problem we have studied in vain was solved and the solution forgotten 20,000 years ago."

He leaned eagerly toward Eustace.

"Did you achieve any measure of success?"

"I think I did but, as I told Har, my memory is confused. Yet, I have a faint recollection I did solve the problem."

The Thinker sprang to his feet, his eyes alight with enthusiasm.

"If you have done this thing and can recall your process," he cried, "you will have become man's greatest benefactor."

The Thinker Tells a Story

"THIS, I presume, is a vegetable product?"

The professor indicated, with lively distaste, a thin and watery dish before him. Mir had served them in another apartment at the conclusion of the audience. The Thinker smiled grimly.

"It is our only food supply and, of course, it is a vegetable product. We have no animals and, if we had them, I do not think we could bring ourselves to kill them. Where there is so little life of any kind, we could not take it, even to live."

Eustace, who had forced himself to eat sparingly of the unpalatable viands, thrust his plate away laughingly.

"I may grow to like it," he said. "However, it must be seasoned well with the sauce of hunger."

"Habit is a wonderful thing," the Thinker smiled. "When our people first entered the caverns, the summer sun gave sufficient heat to produce meagre surface crops. They raised sheep, swine and other animals. Later, however, when it became so cold and the snow blanket never melted, they sealed the caverns and were compelled to depend upon the mushroom-like growths they had developed."

"How did they happen to find these great caves?"

"In the beginning, they were not so great. Generations enlarged them—but, perhaps you would like to hear the story of the last days of man on earth?"

Brown nodded gravely.

"It would be interesting, I am sure, especially to Eustace and me."

"The world was awakened one morning by terrific shocks, accompanied by destructive winds. The sun was hidden by clouds. At least, so people then accounted the twilight that spread over the earth. Cities were shaken down and multitudes perished in the ruins. In New York, millions were swept to death by tidal waves hurled out of the deep by some awesome power. Hurricanes of terrible violence followed, leveling trees, smiting buildings and wrecking the works of man and nature. The record of those days would seem to you like the ravings of a madman."

"Was that the beginning of what you know as the Great Catastrophe?" Brown inquired.

The Thinker nodded.

"It's all puzzling to me," the professor confessed. "Science in our day—you understand I refer to the period when Eustace and I went into our long sleep—did not consider even the remote possibility of such a terrible disaster."

"Had you never speculated on the contingency that the earth might some day grow cold?"

"Indeed, we had. I wrote an essay on the subject myself, but it was merely an academic consideration of a remote possibility."

The Thinker regarded him oddly.

"There was a man of your name—Brown—who first advanced the theory that the solar system might become involved with a wandering nebula, composed of ice or something else capable of absorbing much of

the sun's energy, with resulting reduction of the earth's temperature to the point of catastrophe. Did you ever hear of him?"

"Yes," the Covard pedagogue replied, a horrified expression on his face. "I remember the theory you mention and also who advanced it. I was that man."

Astonishment, mingled with awe, was expressed in the Thinker's voice.

"Impossible!"

"It is true! My article was ridiculed, at the time, as a fantastic contribution to the pseudo-science of the period. Yet, I felt there was a certain plausibility for the hypothesis."

"There was more than plausibility," the Thinker answered. "In fact, that is precisely what happened to the solar system. To me, far removed from the actual occurrence of the disaster, the amazing fact is that your appallingly logical warning did not arouse astronomers and other scientists to the imminence of the danger when the strange nebula first made its appearance."

"Was there, then, warning of danger?"

"I would not say warning was entirely lacking. Of course, I have only the authority of the meagre histories penned by our first leaders and the oral traditions handed down from generation to generation of Thinkers. There may have been more of warning than I am aware, but the people, happy, prosperous and accustomed to a diet of sensationalism in popular science as in their chronicle of daily doings, proved heedless. This much is certain, however, either they were stubbornly indifferent to warnings or the danger was underestimated by scientists of the period."

"It was an age of comfort, luxury and happiness," Eustace sighed. "Even if they had been advised of disaster, I question whether the scientists of the period could have convinced earth's easy-living millions that a terrible fate impended over them. They had an almost fatalistic confidence in the continuation of natural things in their seemingly foreordained and orderly way."

The Thinker agreed.

"In any event," he continued, "civilization suffered a disaster so complete that all social regulative agencies were annihilated. Nations reverted to primitivism, forgetting everything except food and personal security."

"Horrible!" murmured Brown. "In my wildst imagining, I never pictured anything like that."

"Famine followed and brutal wars for bread. Myriads poured from the wrecked cities to ravage the countryside or to perish miserably of hunger and privation. All ties of civilization, even of blood, were sundered. The earth was peopled by perishing Ishmaels, who had no thought but the desire for self-preservation."

"How did any survive?" exclaimed Eustace.

"One man maintained his poise. He was a scientist and realized the cause of the disaster. With his family and followers, he fled to what then was known as the Mammoth Cave of Kentucky. To the number of several thousand, they found refuge there, provisioning themselves as best they could and blocking the entrance while waiting for the turmoil to subside."

"What a frightful experience!"

The Thinker nodded and continued.

"WHEN they emerged, earth was a mocking resemblance of her former beauteous self. The day had increased to sixteen hours and ever since gradually has been lengthening, but the sun's rays had diminished to such an extent that it was almost dark.

Emigration to the tropics was impossible, as earthquakes had flung up new barriers or seas had flowed over former fruitful areas. Dispirited, their scouts returned to the cave and the little colony began life as you now see it existing. Later on, to meet their needs, the caves were linked together and extended, our people retreating into deeper caverns as the cold on the surface grew more intense."

"These are not the original caves?" Brown asked.

"No. Some we discovered. Others were hewed out with great labor. The work progressed more rapidly after discovery of the process for condensing light. That gave us the River and also a source of power. From the first, our energies were directed to the discovery of some means of overcoming gravitation, in the hope we could leave this dying world and establish ourselves on another and more kindly planet."

"Who are the dwarfs we first met?"

"I know as little of their origin as you. They broke through the rocky wall of our caverns early in the history of our occupation. How their ancestors survived the Great Catastrophe, we do not know. Neither do they. They speak another language and are brutal, degraded cannibals. Their numbers, at first, were limited, but they have grown more numerous, seeming to prosper on the mushroom food raised in their own caverns, to which we early diverted the River of Light. From their caves, the stream returns to a great central pool, whence it is elevated and started anew on its course. Alternately, they prey on our crops and on our people and beg our assistance."

"Why don't you kill them off?" asked the professor.

The Thinker's face expressed horrified repugnance.

"Kill humans? That is one degree of infamy to which we have not been forced to descend. At times, as when they kidnapped Mir, we must teach them to respect our rights and lives, but our people shrink from even such forays."

Har entered and announced that a company of soldiers was waiting to escort Eustace and Brown to the cave from which they had emerged into this new, strange, somber world. They followed the River of Light to the spot where they had encountered the cannibals and, after a little difficulty, found the path they had traveled. The Thinker accompanied them to the experimental cavern, displaying intense interest in all its furnishings and, particularly in the massive receptacle Maynard had designed, ages previously, to launch into space. He expressed disappointment at its size.

"It would carry only a few persons," he observed.

"I had not intended sending any one in it," Eustace explained. "My thought was that it might put us in communication with the inhabitants of another world. These books explain matters of primary interest in the life of our times and are written in several languages and also in geometric code."

"Your chemicals, I see, have been destroyed. What if your memory of the compounds also had vanished?"

"My recollection is not of the best," the young man confessed.

The Thinker sighed.

"We must wait. At least, we have a new hope, to which we have been strangers for centuries."

Maynard had been idly turning the pages of a book he had taken from the iron cylinder. The writing was clear. The mysterious gas that had caused him to slumber so long had also preserved the volume. A sentence caught his eye. He read it again. With a cry, he thrust the book into the Thinker's hand.

"Read!" he exclaimed. "It is the lost formula!"

The professor leaned over to scan the writing.

"It is all there," Eustace continued. "I set it down so people on other spheres could send the shell back, if they could understand what I had written and possessed sufficient knowledge to compound the chemicals."

"Do you mean the secret of overcoming gravitation?" the Thinker demanded.

"Yes. If we can find the necessary chemicals, there is no reason why we should not be able to abandon this dying world and emigrate to another."

The Planet Hope

THE precious records were transported to the city of the little people. The Thinker, unable to restrain his joy, preceded them to spread the news. Men and women pressed forward to kiss the books. Surrounded by the elated mob, the volumes were borne to the huge laboratory building, black-browed Rab being hustled out of the large central apartment he had occupied as chief of the research division.

"What does this mean?" he demanded angrily.

"A method has been found to overcome gravitation. These books preserve the secret."

"Impossible."

Rab's tone was bitterly contemptuous. He turned furiously upon Eustace.

"Curses on you, charlatan! You are misleading these unfortunates and will leave them in deeper despair when your falsehoods are exposed."

He strode from the apartment.

"There is something behind his antagonism," Eustace remarked, when he and the professor were alone.

"I think so, myself," Brown replied, drily. "Her name is Mir."

"Why Mir?"

"Why anything or anybody else? Two men and a woman have been sufficient to make endless complications ever since the world began."

The Thinker re-entered the apartment, checking the indignant reply that trembled on Maynard's tongue.

"Come with me to the astronomical laboratory, if you are not too weary. It is some distance, but I wish to show you the planet to which we intend to migrate if your plans are—feasible."

En route, they passed two smaller cities, also surrounded by strong walls. Both were deserted.

"Generations ago, both were populated," the Thinker explained. "We then had hundreds where we now have one."

At one of the cities they rested a short time and the professor fished in his coat pocket for pipe and tobacco. Intent upon his thoughts, he filled the bowl mechanically, leaned against the side of a stone house and puffed industriously.

"That, I presume," their guide remarked, "is the act the ancients called 'smoking.'"

"Heavens!" Brown exclaimed. "Have you no tobacco?"

"We know of it only by tradition. The forefathers made desperate efforts to grow the weed, but were unsuccessful."

"Now, I know we have reached a desperate crisis in human affairs."

In comic dismay, the Covard instructor smothered the embers as they arose and carefully caulked them with a bit of mushroom to prevent loss of the unconsumed contents.

"I hope this new planet of yours has something that will serve for tobacco," he smiled. "In the meantime, I intend to practice conservation."

The path they followed steadily ascended. The River of Light ever was at one side, pouring in a

luminous tide toward the pool at which the Thinker had spoken. Eustace paused abruptly.

"What would happen," he asked, "if the machinery for raising the River ceased operating?"

"In a few days, we should be plunged in darkness," the Thinker replied. "Then, crushing, deadly cold would settle over our caverns. Unless we repaired the machinery promptly, we should freeze."

He turned into a narrower cave, leading off at right angles from the one they had been traveling. A tiny stream of light flowed through it, affording dim illumination. They came to a rock door. A dank chill greeted them as they passed it and entered a small chamber.

"We must dress warmly here," their guide explained, selecting garments from stone pegs on the wall. "These will be small for you, but will suffice for the short time we shall be in the observatory."

Eustace and the professor struggled into the clothing, drawing hoods provided with goggles over their heads and protecting their hands with thick gloves. The Thinker opened a door. A cold light shone through the opening. He closed it. They were conscious immediately of the intense cold of the room.

"This light seems to come from the moon," the professor remarked, "but, I presume it is sunlight."

The Thinker nodded and led the way to a huge steel structure. With practiced hands, he manipulated a large mirror.

"Here is our telescope. This is the bottom of what you knew as Lake Michigan. When it froze solid, the fathers thawed a tunnel through the ice to the surface and inset a huge lens, which had been ground in Chicago shortly before the Great Catastrophe. The world died, but the product of the skilled old craftsmen survived."

In the mirror they perceived a startling picture of greenery. Immense trees towered into the sky, clouds floated over riotously verdant valleys, rivers glistened and a half-gale rocked the herbage.

"You are gazing upon Hope, the planet we hope to make our home, if departure is possible from this dying earth. Young and generous, it has everything needed to make our people happy, contented and prosperous."

"Where is it?" Brown demanded.

"It is one of several planets revolving around a sun we call Providence. It was not known to your generation. After the Great Catastrophe, we believe many changes occurred in the heavens. Thousands of years ago, Providence and its planets appeared in our field of vision. We watched it and them, generation after generation, millenium after millenium, as they drew nearer earth. Thanks to the clarity of earth's atmosphere, it is possible now to study Hope and to observe even such details as you have noted."

"If that beautiful planet is so close to earth," argued Brown, "why is it not cold and lifeless like our own? Or, conversely, if we are so near the sun of Providence, why shouldn't earth be equally warm and fertile?"

"It is not nearly so close as you imagine perhaps," smiled the Thinker. "This lens and accessories, which amplifies light by means of a bank of vacuum tubes, and through which you are looking, is so much greater than any your age possessed, that you have no means of comparison by which to estimate its power. It was the only one of its type ever moulded. The work was concluded on the eve of the Great Catastrophe by a newly discovered process. Great hopes for new discoveries through its use were entertained by scientists of that age."

HE smiled in melancholy recollection.

"They did not have the remotest conception of the strange setting in which it eventually would find a resting place."

"I can readily understand that," commented the professor, feelingly.

"Again, you must remember there are practically no atmospheric handicaps to observation now. All moisture was precipitated long since. Because of the almost unchanging temperature on all parts of earth, winds are unknown and the air is practically motionless. Nor must you overlook the fact, of course, that our position deep in the earth, where not a ray of sunlight penetrates, affords obvious advantages."

He swung his arms vigorously, exhaling his breath in a cloud of vapor.

"This discussion is invigorating mentally," he smiled, "but it does not mitigate the temperature of the observatory. Continuing with my answer to your question, however, it is certain tremendous celestial changes occurred simultaneously with the diminishment of the sun's power. It chanced that, by the time this lens had been found and mounted, there was not an astronomer living who had survived the Great Catastrophe. In their methodical effort to prevent total obliteration of the culture and science of their age, those early-day cave dwellers set down painstakingly all they knew that would be beneficial to posterity. However, theirs was a natural tendency to conserve knowledge, which, in the light of their own experience, would be most in demand by, and would prove most beneficial to, the future."

"I can readily understand their viewpoint," Eustace conceded, vigorously massaging a tingling ear.

"If you find the chill too pronounced, we can adjourn elsewhere," the Thinker suggested, but the others negated the suggestion.

"Thus it happened," he continued, "that by the time the lens was mounted, we had lamentably little information regarding your astronomical observations and no celestial maps at all. However, there always has been a belief among our scientists that the Great Catastrophe was of far vaster extent than terrestrial survivors understood and resulted in tremendous celestial changes. The planet, Hope came within the range of our observation as soon as the giant telescope was completed. Perhaps it was born of the disaster that overwhelmed our sun. There has been much speculation on that point. In any event, century after century, our solar system traveled toward the system dominated by the sun of Providence and Hope came closer to earth. At one time, we entertained a wild dream that, eventually, earth would swing close enough to Providence to make its surface habitable once more. This hope died centuries ago. Our solar system now seems to be circling that central sun at an unchanging distance."

They walked rapidly up and down the chamber to restore circulation, but they were too engrossed in his narrative to accept his repeated suggestion that they leave the observatory.

"Of course, Hope is remote. We are not adept in such calculations, but the fact that it is warmed and vivified by Providence, whereas we experience the effect of that sun's rays little, if at all, is proof of its distance from us. It is this circumstance, more than any other, which has proved discouraging. Even if we could discover means of leaving earth, we cannot perceive how it could be possible to propel vehicles so far or to guide them through the ether to a safe landing."

"I don't think that obstacle is insurmountable,"

A New Hope

Eustace declared. "Of course, we shall send a trial messenger through space to ascertain our probable chances of success, but mere distance or the pull of our own sun or of other planets would not daunt me, if we could launch our projectile toward Hope when it and earth are in proper relationship to each other."

"Your confidence is inspiring," declared the Thinker. He twirled the mirror. Abruptly, he stopped it. "Look!"

A LIVING creature crept across the mirror. It had four legs and two arms, the latter set grotesquely on either side of a huge, gorilla-like head. The skull was small and long hair covered the body like a thatch.

"The fact this creature lives, we consider proof of an atmosphere," he explained. "It breathes. We have noted, during winter on Hope, that clouds of vapor comes from its mouth or nostrils. Apparently, therefore, it is warm-blooded. From the contour of its body, particularly the moderate lung cavity, we deduce that the density of the air must be similar, at least, to that of earth. We cling to the belief that, as Hope has streams and rain, the gaseous composition of its atmosphere must be comparable with our own and that we could therefore make it habitable for us."

The pictured beast, in impish fancy, had grasped and placed to its mouth or nose a piece of greenery. The filmy vegetable expanded like a balloon. Larger and larger it grew. As it burst, the creature raced out of sight into a thicket of dense underbrush, obviously for protection.

"You must agree with me that the creature breathes," their guide exclaimed. "Where it lives, we may hope to survive. In any event, it is better to risk death than to wait that certainty here. On the earth there is no more hope."

They returned to the main cavern, depressed by the contrast between the riotous verdure on Hope and the rocky darkness of their barren caves, yet encouraged by the fact that so beautiful a planet was within the visual scope of the great telescope. Brown and the Thinker paused at the children's hospital, which Brown wished to visit, but Eustace continued on to the laboratory.

As he entered, he heard a man's voice raised in anger and a woman's in entreaty."

"You love him!" the masculine speaker asserted.

"You have no ground for such a statement," the other replied. "I have not given you cause to make it and neither has he."

"Are there no men of your own people who can please you? Why listen to the lies of this giant charlatan?"

The woman did not reply. With quickening pulse, Eustace had recognized the man's voice. The speaker was Rab.

"Better you should die than disgrace our people," the man screamed.

Eustace heard a cry of fear as he raced into the room. Rab had grasped Mir and was carrying her, struggling, toward an open conduit leading down through solid rock to the River of Light. He hurled the man aside and caught the girl in his arms. Scrambling to his feet the venomous pygmy fled. Maynard held Mir close to his breast as he sank on a bench.

She was very beautiful and his heart beat violently as he supported her. Abruptly, she drew away, knelt at his feet and, for the second time, carried his hand to her lips. Before he could protest, she was gone.

MAYNARD'S experiments continued unceasingly, day and night. He had pressed into service all the technicians of this strange underworld. Troops of miners went out into distant caverns and tapped ore deposits unworked for millenniums to bring in the raw materials he desired. The little men were feverishly interested and indefatigably busy. Life to them, previously hopeless, had become dazzlingly brightened by a new hope. They haunted the neighborhood of the laboratory, snatching up every crumb of information from the workrooms. Professor Brown became, for Eustace, the official herald of events outside.

"Trouble is afoot," the former declared one evening. "That so?" Maynard asked abstractedly, his mind on an important experiment. "What's the matter?"

"Rab has left the city and joined the cannibals."

Eustace whistled. This was news, indeed.

"What's his idea? What does the Thinker know about his purposes?"

Brown shrugged his shoulders.

"No one can say, but there is a shrewd suspicion he intends mischief. The guard at the outer cavern has been doubled and scouts have been stationed near the cannibal caves."

"Mir—what does she think?"

"I don't know," the professor laughed. "Personally, I'm of the opinion he will try to steal our secret formulas?"

"That all?" Eustace's tone was indifferent. "If he wants them, I'll give them to him. They are duplicated many times. Should he steal one set, we have a dozen more."

"He may try to do, at the end end of this strange world, what we are seeking to do here."

"I hope he does. Those little beasts are far down in the scale of humanity, but they are men and women, after all. If Rab can manufacture vehicles and chemicals, to take those cannibals to another sphere, he will lift a load from my shoulders. I have been wondering what we should do with them, when we were ready to leave."

"You intend transporting them to Hope?" Brown asked, in amazement.

"What else? Would you leave anything living on this dying planet? I wouldn't. Even Rex and Queen are going with us. I didn't know how we could entice the cannibals into our cars, but I intend to try. If Rab can handle the matter, so much the better."

"Don't you realize they would introduce a disturbing element into your new Eden?" the Covard instructor asked, half jestingly, half in earnest.

"Professor, neither you nor I nor any one else can know whether we shall survive in that new world. Those cannibals might live, where we could not. I wouldn't chance the wiping out of the human race because of distaste for them."

Brown nodded, a curious smile on his face.

"Association with these people has produced odd changes in both of us. Do you know, I had come prepared to plead for the cannibals? Somehow, the doctrine of the survival of the fittest does not seem so plausible when one faces the possibility that the entire race may be exterminated."

"Possibly, if I were certain we were the fittest to survive on Hope, I would have fewer compunctions. But I'm not sure."

"Neither am I," Brown replied soberly. "I hope Rab succeeds in transporting them there."

Maynard's experiments were progressing rapidly and

satisfactorily. To his delight, the formulas were working out in accordance with his calculations, penned thousands of years previously. As a final test, he again placed Rex under the influence of the gases to ascertain whether they possessed the power of suspending animation. Every nerve tense, he gazed through the crystal sides of the experimental chamber, saw the dog sink slowly to the floor and then slip into peaceful slumber while the Thinker, Mir, Har and other of the dwarfs watched with breathless attention.

"Is he dead?" the girl whispered.

"I think not," he replied, in a low tone. "Heavens knows, for our own future, as well as that of Rex, I hope not."

"Will the outcome of this test determine success or failure?"

"Yes, for the moment, at least. If it is successful, I shall know I have properly reconstructed the chemical agents that serve to overcome the force of gravitation. Should the experiment fail, I shall have to conduct many more to ascertain where I have erred."

"Even then, you would not abandon hope?"

"No. I know it was accomplished once. I am positive it can be done again."

The Thinker breathed a gusty sigh of relief.

"I am happy to hear you say that. Would you like to see the place we have constructed, from which to send the shell on its fateful journey?"

IN a small cavern adjoining the cave where the giant condensers worked unceasingly, the dwarfs, by infinite labor, a prodigious expenditure of light-energy and at great danger from the terrible cold, had excavated an opening through the solid rock to the surface of the earth.

"As soon as we have finished the big doors to close the opening, we will send men outside to clear away the snow," the Thinker explained. "For several weeks, during which you have been conducting your final experiments, volunteers have been accustoming themselves to the low temperatures of the astronomical observatory and, later, of a small cavern separated by only a thin rock wall from the surface. You see the hoist for the shell is nearly finished. When you are ready, we will raise the vehicle to the surface and shunt it out on the ground. We shall conclude our work in ample time."

Eager to make the fateful test, Maynard hastened to the laboratory. Rushing into his work chamber, he collided with Rab, fleeing with an arm load of manuscripts. Mir was lying on the floor. The dwarf darted toward an open shaft leading down to the River of Light, obviously intending to throw his burden into the stream. Eustace tore the volumes from him and flung him against the wall. He fell to the floor, limp. With a cry, the young man knelt beside Mir and raised her in his arms.

"Mir!" he cried.

Her eyes were closed. As he drew her to him, her hair brushed his face. He rained kisses on her still lips. Rab, bruised and unsteady, crawled to the pile of books. Sweeping them up, he fled. Mir's eyes opened in terror.

"Is he gone?" she exclaimed.

"The coward!" Eustace replied, hotly. "I feared, for a moment, that he had seriously injured you."

She glanced shyly into his face.

"I came in to see you and found him stealing the records."

"He could have them all, dear, rather than frighten you like this." He kissed her passionately and her arms fluttered around his neck.

"I wonder whether you can really love one like me," she smiled. "I am so ignorant of the things that interested the women of your time—fashions and sports, clothes and society. Why, Eustace, we have even forgotten how to play and history tells us your age played in its every waking hour, at business, games and the strange thing you called politics."

"I have forgotten that any other world ever existed. Your life and mine are two hundred centuries apart."

"Our love shall bridge the centuries."

She crept close within his arms.

"After all, love is everything," she whispered.

"Everything else is transitory, but love will make us happy even in this sad old world."

The Test Trip

THE experiment with Rex proved brilliantly successful. After a brief period of slumber, the noble animal awakened as strong as before. The loss of the books stolen by Rab did not trouble Eustace. All information in them was duplicated many times. Maynard really was grateful for the theft, because it gave the black-browed one sufficient data for duplication of his own experiments, if he could induce the cannibals to find and mine raw materials for chemicals and shells. Transportation of the first exploration vehicle to the little cavern taxed his ingenuity, but finally it was placed on the hoist and raised to the upper level for its jaunt into space. At the last moment, a controversy arose.

"How can we be sure," the Thinker asked, "that it will land on Hope?"

"We cannot be sure," Eustace admitted, "although by sending it on its way when the planet is in juxtaposition with relation to earth, we have every reason to believe it will go straight to its intended destination."

"What if it is influenced by another planet—our Sun or Providence?"

"It would hurtle toward the one exercising the controlling power."

The Thinker's brow wrinkled in thought.

"Is there no way to control it, even if some one were inside?"

"Yes. The act of leaving earth would not exhaust the chemicals. There is sufficient to check its descent when it reaches Hope and also to overcome gravitational forces of other planets tending to swerve it from its course, but it would be necessary that some one utilize the chemicals intelligently."

"We cannot risk failure," the Thinker declared. "I shall go with the shell."

"Impossible! We cannot rob this people of its leader."

"I have aided Eustace in his labors," Har interjected. "It is best I should go."

"The things he has taught you, I can learn," the Thinker declared.

"I know more of these agencies than either of you," Eustace declared. "I will make the trip."

As a compromise, Brown offered himself but, far from solving the problem, his tender complicated it.

"We shall draw lots," the Thinker decided. "Eustace, you are barred by virtue of your knowledge of these matters. One of us three shall go."

At the conclusion of the drawing, Har triumphantly held aloft a tiny, fateful shred of mushroom fiber.

"I have won!" he declared.

"I, also, shall go," his wife said.

"May two be carried?" the Thinker asked, after a pause.

"Yes," Eustace replied. "It will transport them, with all their provisions and supplies."

As he spoke, he bowed gravely to the devoted woman. "Then, Har and his wife shall be the first Americans on Hope."

Provisions, water, weapons and other equipment for the long journey and also for the landing on Hope were stored in the shell. The entire colony gathered to witness its rise to the cavern, from which it was to be shunted to earth's surface. Har and his wife exchanged last farewells. The door of the vehicle clanged and he drove into place the massive inner bolts securing it. The projectile rose, passed through the double doors and disappeared.

"It has passed the outer door," the Thinker said, in a low voice.

A pause.

"It has arrived on the platform, which will shunt it off on the ground."

A longer pause.

"It is now off the platform."

His voice was solemn, yet tinged with an indefinable confidence.

"We have bidden a last farewell to Har and his devoted wife. God grant we shall be reunited with them on Hope."

He turned commandingly to the professor and Eustace.

"Let us go to the observatory."

Scarcely able to contain themselves while donning heavy protective garments, they burst into the chamber. Eustace, in the lead, seized the mirror and whirled it.

"Look!" he cried.

The Thinker and Brown crowded on either side. In the center of the glistening mirror was the projectile! Spellbound, they watched it shoot straight toward Hope.

"It will arrive," the Thinker declared solemnly. "We must possess our souls with patience during the long period until success is certain, but I am confident, in my heart, that Har and his wife will be the first Americans to land on the destined future home of the race."

In endless relays, scientists of this strange world trooped to the observatory, remaining to the limit of endurance within its chill confines and giving way to others, as eager to follow the projectiles on its fateful flight. Eustace had time for only occasional visits and these at long intervals. Confident now that Har would succeed in devising means to transport the cannibal dwarfs to Hope, he limited the manufacture of projectiles to a number sufficient for the accommodation of the Thinker's people. Even so, the fabrication of these and the preparation of chemicals, preservation of food and other labors incident to the projected exodus taxed all available man-power.

Brown was the courier uniting his office with the observers in the astronomical laboratory. From him, Eustace learned that the shell was hurtling at incredible and, seemingly, increasing speed toward Hope. At night, it was impossible to discern it amid the glooming mass of the planet. It was then that wild rumors of failure arose to run, like a black cloud of despondency, through the tense-nerved community until throngs of distracted people flocked to Maynard's factory, where they gained new confidence by observing his purposeful activity.

MIR was a constant visitor, coming on light foot and frequently surprising Eustace as he glanced up in preoccupation from deep calculations or after minute study of a new piece of test metal. There was

a great understanding between them. He would continue his work while she sat quietly beside him, until he had concluded. Sometimes she would slip away on some mission of her own, when he became absorbed in his labors. But, there were other times when he fled from his tasks, to sit with her for long hours. She would listen with insatiable patience as he sketched his problems or detailed the progress of his work, or would sit with him in silence while he rested body and mind in her loved presence, happy to have her with him and preparing for new and greater efforts.

It was understood that they were to be married as soon as possible, but he desired first to know whether Har had failed or succeeded. If Har failed, he had determined to be the next pioneer voyager into space, for he was supremely confident of his ability to bridge the gap between earth and Hope. But, he had sternly resolved to make the journey alone. On the other hand, if Har was successful, all bars to marriage, interposed by his own iron will, would disappear. Then, he and his bride would launch on the strangest honeymoon the race had ever known, a journey over the uncharted lanes of interstellar space to a home on another planet.

After what seemed an interminable period, word came to him that the shell was nearing its goal. Accompanied by Brown and the Thinker, he spent the last fateful hours before the observatory mirror, indifferent to the deadly chill of the somber chamber. The shell had become a blur on the broad expanse of Hope's verdant surface. They experienced the greatest difficulty in following it. However, constant checking of its position satisfied them that its speed had been retarded as it neared its objective and they were confident that Har was intelligently utilizing the chemicals to check its rapid descent.

Fortune favored them at the last. It entered the atmosphere of Hope in daylight, seeming to float for minutes above a broad, open space close to a gigantic river. They could not follow its flight to the ground, because the riotous vegetation on the planet cloaked it. However, after a time, they perceived a thick mass of smoke spiraling upward through the towering trees—the signal Har had agreed to send after his arrival, if atmospheric conditions were such as to permit him to venture outside the shell.

"Of course, the fire might have been produced by contact of vegetation with the exterior of the shell," Brown observed soberly. "It is reasonable to assume a body passing through Hope's atmosphere at such speed would become very hot!"

"Personally, I do not believe, from my observation of the shell's progress to its final landing," Eustace replied, "that it traveled fast enough to generate much frictional heat."

"We shall know more tomorrow," the Thinker replied. "Night rains are frequent on Hope and will extinguish the fire, however started. If there is smoke again tomorrow, at about the same point, we shall know the fire was set by Har."

The succeeding night was the longest and most torturous of the entire vigil. Dawn on Hope found the three in the observatory, attention glued on the magic mirror, while a hush of suspense and expectancy settled on the city of the dwarfs. Impatience grew to agonizing proportions as the hours passed without recurrence of the fateful signal. Abruptly, a drove of the strange beasts they had previously observed lumbered from the underbrush in the vicinity of the spot where the shell had fallen. Two fell and did not move again.

"That explains Har's delay!" cried Eustace.

"What do you mean?" the Thinker demanded, inflected by the other's excitement.

We are witnessing the conclusion of the first battle between earth man and the beasts of Hope! Evidently, they were attracted by curiosity to the shell and Har has driven them off, killing two of them. While they were in the vicinity, he dared not venture out to light the signal beacon."

"I believe you're right," ejaculated Brown. "Look!" A column of smoke rose through the underbrush and drifted lazily above the trees.

"It is Har's signal!" cried the Thinker. "He has won through! Gravitation has been overcome and we shall found a new world of man on Hope!"

Final Preparations

THE bonds of restraint, which had bound the dwarfs for centuries, were broken. They, that never had known joy or hope, grew drunk with happiness and pride of achievement. With a gigantic labor ahead, they viewed the goal as immediately won. Preparations of the numerous projectiles necessary to transport them to Hope was viewed as a mere matter of detail. Eustace was hailed as the greatest man of all ages. His marriage to Mir was the occasion for protracted and unusual merrymaking.

"We are products of two worlds, sweetheart," she said, kissing him, "and we stand on the threshold of a third. Never was there a marriage like ours."

"I have no fears for the future," he replied. "We shall evade the disaster that has threatened our ill-fated people for millenniums."

The wedding was signalized by an intensification of preparation for the great migration. From their mines the little men brought forth immense added quantities of ore, which they treated with light as power and fluxing agent. The projectiles constructed were larger than those in which Har and his wife had ventured into the unknown. The cavern from which the astral pioneers had taken their departure was enlarged, the hoist strengthened and the doors replaced by others permitting the passage of the greater vehicles. For the first time in their history, the little people were prodigal in expenditure of their most precious possession—light. Confident the hour of deliverance was at hand, they employed it unsparingly.

"This is the occasion we have awaited for centuries," the Thinker smiled. We are staking our all on its success."

"We shall win through to Hope," Maynard replied. His confidence inspired them. There was no thought of failure. Immense stocks of the precious chemicals were manufactured and sealed in everlasting rock, in order that there might be no recurrence of the disaster that had plunged him and Brown into their century-long sleep. He grew worn at toil but found labor sweet, for Mir was ever at his side, lightening his titanic task by her presence. From the cannibal caverns came strange stories of great activity in other mines, indicating that the debased ones were engaged

in a work similar to that engrossing the attention of the Americans.

"Rab is making good use of the stolen books," Brown observed. He has even made those savages understand what we intend to do."

"I am glad he has," Maynard replied. "As he has all my secret formulas, further responsibility for saving his wretched crew rests on his shoulders."

"Can they manufacture chemicals sufficient for their transportation?"

"Why not? The raw materials seem plentiful. Rab is an educated man, though he is misguided. He, and they, should reach Hope."

"What if they do?"

"Why trouble the future? Our present problem is big enough, certainly."

The day on which the last shell was completed was one of merrymaking and feasting. In the midst of the celebration, a scout raced through the streets.

"The cannibals are out!" he gasped. "Rab intends to steal our shells."

"Shall we stay and fight?" asked Brown.

"Why delay?" Eustace asked. "We are ready. Let us leave at once."

The little people hastened to the chamber where the shells were stored. Each family had been assigned a projectile. They disappeared into the vehicles like rabbits racing into a warren.

One by one, the shells rose on the new hoist, passed through the double doors and were shunted out on the earth. The last and largest moved smoothly to its place on the lifting mechanism. Eustace held up his hand for silence.

"I can hear the shouts of cannibals. Hurry!"

He assisted Mir into the Shell, which also accommodated the professor, the Thinker and the Thinker's wife. As he stepped inside, he paused to cast a final glance about the cavern.

"Come, Rex! Come, Queen!"

The dogs reluctantly entered the projectile. A dwarf dashed in the cave and paused uncertainly. It was Rab.

"Farewell!" cried Eustace.

"We shall meet again!" Rab replied, shaking his clenched fist.

Eustace bolted the entrance as the projectile arose. Glancing down, he saw the black-browed one impossibly menacing the shell. Then, the heavy steel doors closed, they were on the shunting platform, slowly sliding to solid earth. The other machines had departed. They were alone on the surface of the dying planet.

"Good-bye, earth," Maynard said, with a catch in his voice.

He pressed a button and the shell leaped upward. Through a window, he caught a fleeting glimpse of the shunting platform, man's last creative work on earth's surface. Then, he turned his eyes upward to the vast void above.

There, clear and brilliant, the star of Hope seemed to beckon to a new and kindlier life.