

# IN THE DEEP OF TIME

BY GEORGE PARSONS LATHROP.

*This story is the result of conversations with Thomas A. Edison, the substance of which he afterwards put into the form of notes written for my use. His suggestions as to inventions and changed mechanical, industrial, and social conditions in the future, here embodied, I understand to be simply hints as to what might possibly be accomplished. Mr. Edison assumes no further responsibility for them. For the story itself I alone am responsible.*

GEORGE PARSONS LATHROP.

## I.

### "VIVIFICATED."

NEAR the close of the nineteenth century the Society of Futurity was formed for scientific experiment on a colossal scale. There was a considerable number of associates, all of whom were bound to secrecy, and these supplied a large endowment fund. To make their obligations of reticence the more sure, the secrets of the society were not told to them, after all, but were preserved by a small head committee known as The Three.

The Three were to be perpetuated in each generation by successors appointed by the first Three. Of the original trio, the famous inventor Gladwin was one, and he found in Gerald Bemis, a young friend of his, a willing subject for a vital test—nothing less than the attempt to suspend his life for two or three centuries and return to consciousness and activity after that interval. It was an old idea, but it had never been carried out except in imagination and in impossible books. Gladwin, however, thought he had now

solved the problem, and was anxious to try his solution.

Bemis was a stalwart, handsome fellow, full of life, with a gay smile ever ready to brighten his lips, and with short auburn curls a-dance on his broad, frank forehead. He was highly educated, and an enthusiast in matters of science. But what came still more to the point, he had suffered a reverse in love, and fancied that he could take no further personal interest in the present life. Suicide was alien to his temperament as well as to his strong natural and religious instincts and faith. But "vivification," as Gladwin's new process was called, would relieve him from conscious existence now, and also make him a pioneer of the human race in advancing into another generation beyond, while still retaining membership in his own generation.

"It is done," he exclaimed to Gladwin. "I agree to be vivified!"

Yet, after the decision had been made, he underwent severe struggles. Now that he was to part from the world for so long a time, the living, moving, human creatures whom he saw upon the streets, in clubs and hotels, at receptions, at fashionable dinners, or at the theatres—so charged with intense interest in their daily affairs, ambitions, and ideas—appealed to him in a new way. "Stay with us!" they all seemed to be saying to him, though their lips moved not. "You are one of us! Don't go! Don't leave us! Take your share of human experience while you are here among us, and can be sure of it!"

The trial was hard indeed. But he persisted ; although "Life prolonged without the old companionships," he admitted, "is little different from death."

When the appointed day came, and he went out to Gladwin's high-walled laboratory in a woody solitude near New York, to be sealed up for futurity, contemporaneous life began to dwindle in his view. The crowds he saw in passing, his acquaintance, friends, relatives—even Eva Pryor, whom he had loved so ardently but in vain—all shrank in their proportions until they seemed nothing more than the diminutive and automatic busy reflections of reality in the kinetoscope. With this changed and dreamy mood upon him, there came to him a feeling that he, also, had been reduced to pigmy size, in his own mental vision. Considering the extraordinary ordeal through which he was about to pass, such a sense of his own littleness and insignificance was restful and encouraging. Calmly, therefore, he lay down upon the couch prepared for him in a secret and well guarded alcove of the laboratory, robed in a simple garment of linen, which was dressed, bleached, sterilised, and scrupulously clean.

Gladwin gave him chloroform until he became unconscious. Then a solution of the lately discovered compound, *Tetraethyl-cylonammon*, was injected under his skin. This gradually reduced his heart's action and his respiration to zero.

When, under its influence, all movement had ceased and his animation was entirely suspended, he was placed in a large glass cylinder twice the length of his body and lying in a horizontal position.

A powerful antiseptic, *Mortimicrobium*—Gladwin's discovery—was now injected into his veins. It was a liquid which destroyed all organisms not proper to the body or essential to life, and prevented decomposition. The cylinder of glass was then filled with highly antiseptised air—so that no germs could come to life within it—and, by a number of wind-urged gas-flames, the end of the tube was fused, drawn to a point and hermetically sealed. Thereupon the whole cyclinder, with Bemis reposing in it, was coated several times with collodion, which made a tough, transparent surface and would prevent the ingress of air if the glass happened to crack or break.

So enclosed, as though in a huge cocoon, Bemis was left in the alcove, which was kept heated night and day at an even temperature of ninety-eight degrees Fahrenheit.

There he lay in that fragile case for years, for generations, until three centuries were completed. All the millions of the earth died and disappeared, and new millions took their places. Tempests broke above him, calm weather shone upon his resting-place ; the seasons rose, smiled, frowned, went their way amid the roar of winds or blur of snow, and dissolved one into another in unvarying succession ; but Bemis never stirred within his chrysalis. Governments changed, wars thundered about him, the race progressed or retrograded. Still Bemis slept on, without breath or motion.

Would he ever awake ? Would his soul go abroad again upon the earth conscious, in human form ? That was for the Three in office now, at the end of the twenty-second century, to ascertain.

## II.

### HOW THEY TALKED WITH THE PLANET MARS.

The Three at this time were Graemantle, Wraith, and Stanifex—worthy successors of the first committee. The society had met with almost endless difficulties in conserving even a portion of the old laboratory and Bemis's glassy life-coffin through all the changes of the troubled centuries. But they had triumphed by means of their wealth, shrewdness, tact, and patience. Graemantle, who—owing to the advances made in the saving-up of vitality—had reached the age of one hundred and forty-two, and was regarded as being in the prime of life, was the senior; Wraith kept the records of the past ; and Stanifex was a twenty-second century Conservative, whose function it was to doubt and question everything. The task of awaking Bemis and again inducting him into activity fell to Graemantle, and was performed successfully, notwithstanding the scepticism of Stanifex and the adverse precedents of Wraith.

But it so happened that at the hour appointed for the rousing of the vivified man, most important news had come from the north-west, which admitted of no dallying. Communication had been reopened with Mars, and the result was expected to be of vital moment. Graemantle had only time to welcome Bemis to what was practically a new world before starting for Wisconsin.

"But Gladwin—where is he ? Where is Eva Pryor ?" demanded Bemis, starting up and rubbing his eyes instinctively,



SO ENCLOSED, AS THOUGH IN A HUGE COCOON, BEMIS WAS LEFT IN THE ALCOVE.

although his sight was clear and he felt amazingly refreshed and awake.

"Gladwin died several lifetimes ago," said Wraith. "As for Eva Pryor—"

"Come!" broke in Graemantle. "There is no time to lose over recollections of your infancy. You had better go along with me. It will be a good way to get an idea at once of the new condition of the earth."

So, barely stopping to clothe him in soft silken garments, and to give him a draught of concentrated liquid food that seemed to make up instantly for the missing nourishment of centuries, he led him to an air-cutter. A short flight in this conveyance bore them over the woods from the retirement of the half-ruined laboratory to an electric railway, where they bounded as though by magic on to an electric train moving at a dizzy speed. The rest of the journey Bemis scarcely realised, beyond a sensation of being swept along as though with the whizz of a cyclonic wind. When this ceased they were in Wisconsin, and stepped off into a "walking balloon," which proceeded with long strides of its aluminium legs over a slant of a steep upland.

Here, in Wisconsin, is the Penokee Range of mountains, chiefly remarkable for its belt of iron ore, forty-three miles in length, unbroken and very magnetic. This deposit, averaging 300 feet in width, extends to an unknown, unfathomed depth. It was over the magnetic ridge that they were now stalking. As Graemantle explained: "It contains more iron than all the other deposits of the United States combined; but owing to the large admixture of silicon with the ore, it has never been utilised.

"It occurred to us that we might convert the whole Penokee iron deposit into a gigantic magnet by winding wire around it. The Society of Futurity wanted to talk with other planets; and to do this we must produce on earth magnetic disturbances of great and decided violence. We must produce them periodically too, so that by their force and their definite order of recurrence they would send a shock through vast distances, and compel the attention of dwellers on another sphere. Then they might respond with similar movements, which we could record on *our* magnetometers; and so we could start a conversation.

"Look at that cleft in the range, right under us," he added suddenly. "That's Penokee Gap; and there's our station, with an engine of five thousand horse-power. See those telegraph-poles?"

Bemis looked, and beheld poles stationed like dumb sentries along the mountain-sides as far as the eye could reach, carrying a great number of copper wires. "There are five hundred turns of that wire," his new guardian went on; "and each turn is eighty-six miles in length. They encircle this whole mountain mass of iron, which is their core, and make it a colossal magnet, with which we do our planetary telegraphing."

Alighting at the station, they met Professor Glissman, who was in charge—a small, nervous man, with glittering eyes that made him look as though he wore a pair of sparkling spectacles, or would like to do so if his eyes had not been so bright and piercing without them. As he explained the great machine, he punctuated his remarks with a modest and amiable little cough, as though the bigness of the thing needed some apology. "Five thousand horse-power may not seem much; but the engine drives this great dynamo here, which has an armature wheel eighty feet in diameter, and the armature consists of very fine iron wire, chemically pure and slightly oxidised, over which is wound copper wire, insulated by semi-vulcanised rubber. That surface is carried round at the rate of 28,000 feet a minute. The current lasts only a second or two, but it is sufficient to bring our 500 eighty-six-mile copper wires up to blood-heat. Cast your eye, please"—here Glissman coughed with humility—"on the gigantic switch at your elbow. It is moved by an electrometer, which breaks and closes the current in six hundred places simultaneously, and produces a copper arc seventy feet long."

Then, with a fresh glitter of his peculiar eyes, he pointed out certain leather belts perforated on a definite plan, like a Jacquard loom-card. These belts governed the motor and current controller constantly, with short intervals for return signals. "The engines and dynamo," he said, "if worked continuously, couldn't give more than five thousand horse-power. But we do not take electricity from the machine more than one-hundredth of the time. Hence the enormous potential energy of the fly-wheel is capable of causing a current to be sent out which, during its brief period, is equal to one hundred and eighty thousand horse-power."

The experiments, Bemis was told, had been going on for some eighty-five years. After fifteen years the magnetometer record of the Penokee station suddenly showed—amid the ordinary irregular motions registered on it—a faint periodic motion

similar to the waves it was sending into space. Immediately Glissman—who was then a mere child of thirty-one—reduced the period for sending waves from twenty hours to twelve; and thereupon the very same signals came back from the unknown source and were recorded on the magnetometer here.

Thus, by other variations, and by years of toil, an alphabet and a mutual language was worked out. "And at last," Graemantle informed the newcomer, with a glow of triumph, "from the position in space which our invisible correspondents told us they occupied, we learned that we were talking with the inhabitants of the planet Mars!"

At this instant Glissman's whole demeanour changed. "A message!" he shouted exultantly, and rushed toward the magnetometer.

The needle trembled and moved. Bemis heard a faint "thud! thud!" on the telegraphic instrument.

It was the voice of Mars talking to earth.

The messages that now began to come slowly from that planet were spelled or thumped out by a dot-and-dash system; but Bemis could not understand them until they were translated for him by Graemantle, since they were in a language unknown to him.

The first sentence ran: "Bronson not arrived. Must be lost."

Bronson, it appeared, was a daring aeronaut, who had made the attempt to fly to Mars in a newly invented "antigravitation machine," known as the Interstellar Express. He was now some ten or twelve hours overdue.

The reply from Penokee was: "Why do you think he is lost?"

*Mars answered:* "Local meteors frequent in the path of travel. Our telescopes think he collided. Great regret in Kuro."

("What's Kuro?" Bemis asked.

"Their own name for their planet," Glissman replied.)

*From Penokee:* "Shall we send off another man?"

*Answer from Mars:* "Laughter in Kuro."

(Bemis remarked indignantly, but in an undervoice, as though the Mars people might hear him: "How can they laugh, immediately after Bronson's death in space?" But Graemantle reminded him: "Isn't that the way of the world? It seems to you shocking only because it comes from a distance, abruptly.")

*Penokee:* "Why laughter?"

*Mars:* "Because personal communication is so useless compared with that of the abstract intellect or spirit."

*Penokee:* "But we have told you so often that we want to see you, and bring back a representative of your planet."

*Mars:* "Well, if you insist—"

So much Graemantle had translated, when Glissman, who was listening to the rest, exclaimed, with a mild approach to a yell, and with eyes simply astounding in their resemblance to sunstroke spectacles: "Hurrah! They're going to send us a missionary from Mars!"

### III.

#### BEMIS'S NARRATIVE.

It will be best to continue this narrative in Gerald Bemis's own words—

This affair of the Mars telegraph and the proposed coming of a representative Kurol, or inhabitant of Mars, was sufficiently startling to make my advent into the twenty-second century, my resuscitation after three centuries of unconsciousness, a mere commonplace. The very strangeness and amazement of the first occurrence with which I thus came into contact made me feel, curiously enough, quite at home in this new period.

There was a slight reaction, however, so soon as I turned in to rest at the spacious but cosy inn attached to the magnetometer station of Penokee. Left to myself for a little, I found that an intense yearning overcame me for some visible token, some living link of connection with the remote past. It was all gone, was hopelessly dissolved into nothingness; of what use could it be to me any more, since I myself was still alive, in full possession of my faculties and with a vast present and future spread out before me? Yet, somehow, that vague, unreasonable longing rose up and enveloped me like a mist or fog, exhaled from some unfathomable gulf, through which I groped vainly for the touch of a familiar hand, or listened in despair for the tones of some human voice that I had known and held dear of old.

I listened. What was that? Close by the couch on which I had thrown myself a voice was sounding at that very moment. "Ah, Gerald, Gerald, I wish I had been kinder to you!"

I could hardly believe the truth; but it surely was the voice of Eva Pryor, echoing after death, through the emptiness of three hundred lost years, and greeting now my sense of hearing as vividly as ever.

"Eva!" I exclaimed, leaping up. But the illusion was soon broken. A phonograph stood by my couch; and the voice, I perceived, was nothing but an audible reminiscence. Still, how came the phonograph there? Who had planned this thing?

Just then Graemantle entered the room. "So you are not asleep?" he said in a tone that meant more than the words. "*Would you like to see her?*"

"Eva? Ah, Graemantle, think of it!" said I. "To see her would be life!"

He smiled. "The old life, perhaps," he remarked; "not the new. Are you sure the two will agree? However, you shall be gratified."

"No shadows or make-believes!" I cautioned him. "No kinetoscope or vita-scope. Give me the reality or nothing. But you cannot give it."

"Wait a moment," he interposed. "Be calm, and realise facts. You, Gerald Bernis, were not the only person vivified at the end of the nineteenth century."

For a moment my vanity suffered a blow. The distinction on which I prided myself, for which I had risked so much, was snatched away from me. But there came swiftly a more gracious thought. "I sec, I see! You saved Eva Pryor from death also—saved her for me. How good of the society! It was nobly thoughtful and sympathetic!"

"No," he answered gently. "Purely scientific. Our former committee did not want to risk everything on one specimen."

"So I was a specimen?" I inquired, almost wishing that I had never entered the glass cylinder.

"Eva Pryor," he went on, "was in such agony at your disappearance—for, of course, no one but the Society of Futurity knew what had become of you—that we were compelled to give her the secret under strict pledges and on condition that she, too, would be vivified, with several other specimens, or candidates for futurity."

"Then she is alive?" I asked, my pulse bounding.

"She is here!" Graemantle declared, in a resonant voice.

Instantly the room was filled with a soft, diffused electric light from unseen sources; and my mentor disappeared as though he had been a shadow. All my senses and my nerves, my heart, my eyes, seemed to thrill and to be filled with the thought of Eva. It was as though I had been with her only an hour before, gazing into her mysterious grey eyes, admiring the soft,

rosy, apricot bloom on her cheeks, and wilting into abject despair at the indifference of her disdainfully smiling lips. And, as this picture of her came before me in thought, there she stood—her actual self—in the doorway, gazing at me wistfully!

We rushed together. I don't know why; for our last conversation, thirty-six hundred months earlier, gave us no excuse for such an action. It was an instinctive rush, I suppose. I loved her, and she seemed to be possessed by a reflex supposition. We embraced, as the surviving members of our once young generation. But, alas! I realised at the critical instant, that for me it meant only this. My old love had gone with the old life and the nineteenth century.

On the other hand, there came upon me, with a tremendous shock, a perception of the fact that Eva, after this long interval, had developed towards me a genuine and ardent affection. Being a woman, she had the right to change her mind; but it had taken her three hundred years of suspended animation to do it; and, unfortunately, I at the same time had changed my mind, just the other way, which a man has no acknowledged right to do.

"Dear, dear Gerald," she sighed, sobbed, laughed, all in one. "Isn't it wonderful? We are united at last."

"Yes, dear friend—dear Eva," said I. She continued—"And I was so cruel, so heartless towards you."

"But that is all over now," I assured her. Then summoning my utmost fortitude, I added, "What does it matter what happened in that old century? We are in a new world. You offered to be a sister to me then. I promise to be a brother to you now—nothing more. So let us dismiss the bygones."

Strangely enough she did not appreciate either the tragedy of the situation or the comedy of it, or the sarcasm of destiny, or the pathos involved—if for two people so far removed from their former lives, who were feeling uncommonly well and rested and comfortable, there could be any such thing as pathos. She simply recoiled from me, and looked angry.

"Dear Eva," I persisted mildly, ignoring these symptoms, "I have done everything I can to satisfy you. When you rejected me, I put myself out of the way. Now that we have both reappeared, I efface myself as your lover. Let us go forward, hand in hand, as members of one family—as children of the future, and common-sense friends."

Fortunately, at this moment Graemantle came back. "Good friends," he said heartily, "I am delighted to have brought you together again!"

He had touched the right note. Eva's lips curved into a correct expression as of

So saying he touched a lever by the wall: the entire side of the room swung open, and he ushered us into a spacious apartment—the assembly-room of the inn—where stood, beautifully draped in white with a single diamond of marvellous lustre flashing from the rich dark hair above her forehead, a woman of the noblest stature and best-proportioned form I had ever seen.

"This is Electra," said our guardian; and turning to her: "You know our friends already, by name and record."

She bowed graciously, and came forward with a smile so absolutely sincere that I could not recall having beheld the like of it before; and she took each of us by the hand in welcome.

Then we discovered behind her a tall man, black bearded, almost forbidding in his gravity, but wonderfully handsome, and enveloped in the soft, pliable suit of silk, tinted with prismatic, delicate colours, that everyone, apparently, wore nowadays. "Hammerfleet," said Electra; and we were at once acquainted with him.

I learned afterwards that artificial silk was made in unlimited quantities by squirting nitrocellulose into a continuously worked vacuous space and then reducing it to cellulose by hot sulphhydrate of ammonia and pressure, and had taken the place of cotton and woollen goods among the well-to-do.

At the moment, however, the only thought I could grasp was that Electra had impressed me deeply and tenderly. How could anyone help this with her? She was exquisite, serene, commanding, and absolutely without humbug.

It had been a surprise to me to find that I no longer loved Eva Pryor. It was not at all a surprise that I should be captivated by Electra. Charming though Eva was in her way, she had perhaps placed herself at a disadvantage by having insisted on keeping her nineteenth century costume. The angular slope and spread of her skirt, her unnatural wasp waist, the swollen sleeves, and the stiff, ungainly bulging of her corsage had a grotesque and



"THIS IS ELECTRA," SAID OUR GUARDIAN.

pleasure, and she began at once to play her part of friend and sister, to my rôle of brother, with great skill and grace.

"I don't know just how the Kurol or Mars missionary is coming," Graemantle went on; "but we shall receive word soon. I sent for my ward, Electra, and my young friend Hammerfleet to assist us in receiving him. They have arrived, and I want to present them to you both."

even offensive effect. The extraordinary tangle, also, of artificial flowers, wings, and other rubbish that she carried on her head—for she still wore her hat—was as barbaric or savage as the head-dress of some early Norse warrior or Red Indian chief.

To all this Electra presented a refreshing contrast of harmony, with grace and dignity and a style of dress modern, yet classic, womanly, yet suggesting the robes of a goddess.

I must have made my impulsive admiration for her very evident, for within a few minutes I was aware that Eva had grown sad and ill at ease, and that Hammerfleet was darting at me half-suppressed glances of anger and jealousy. "So the wind sits in that quarter," I meditated, "and he's in love with Electra!"

But the talk turned at once to the new anti-gravitation machine or Interstellar Express car. "There have been a number of them made," remarked Graemantle; and proceeded to show us one in the house. "A good while ago there was discovered in the Hudson's Bay country great masses of ore containing metal which yielded the spectroscopic line of Helium, a metal unknown before except as observed in the sun. Helium differed in some ways from all other metals, and we could make no use of it until one of our most brilliant scientific men—an African named Mwanga, for Africa is now largely civilised and enlightened—discovered that its molecules under certain treatment could be so arranged as to neutralise gravitation. He came near being carried into space himself while experimenting with a big piece of rearranged Helium, that suddenly shot off through the air and was never seen again.

"However, we finally learned to regulate the thing. And now you see this car is furnished with a Helium screen, which, once put into the non-gravitating state, is adjusted and regulated by the voyager, who sits inside this small non-conducting chamber, well provided with stored oxygen for breathing. Of course, many experiments were made before Bronson's last attempt to reach Mars."

"But how," I asked, "can a traveller subsist in so small a space through such a long journey?"

"Oh, it isn't long," was his answer. "It takes about five hours to reach the limit of the earth's atmosphere. When that has been passed, the screen or shield is so adjusted that the car attains to a speed of one hundred thousand miles per

second, there being no friction in vacuous spaces to retard its progress. Now, the whole distance to Mars being forty-eight million miles, it should take the stellar car, at the rate of one hundred thousand miles a second, only four hundred and eighty seconds to traverse it. Four hundred and eighty seconds are only eight minutes. But when the car reaches the atmosphere of Mars, the screen must be molecularly rearranged again, so as not to resist too greatly the attraction of that planet. The car must descend through the Mars atmosphere slowly, by ordinary flotation-shutter apparatus."

(The shutter apparatus for sailing in the air and propelling ships was, I found, one of the most useful inventions of the age, and I shall describe it later.)

"To pierce through the Mars atmosphere, then, involves a delay of three hours more. So we have: for earth's atmosphere, five hours; for Mars atmosphere, three hours; and the intermediate distance, eight minutes; that is, in all, eight hours and eight minutes."

"Whew!" I exclaimed in amazement.

Graemantle laughed indulgently.

"And at what rate do your electric trains move?"

"About a hundred and fifty miles an hour."

"Then it takes no longer to go to Mars by the stellar car than it takes to come from New York to Wisconsin?"

"No," said he; "why should it? Time is only an idea. You thought you knew that before; but now you begin to realise it."

"Still," I objected, "the journey to Mars has not yet actually been accomplished."

At this moment a small side door opened and Wraith and Stanifex, who had just come to Penokee by the electric, and by walking balloon, entered. "Quite right," remarked Stanifex, the doubter, who had heard my last words.

"Wait and see," retorted Graemantle. "I still have confidence."

The floor now opened, and some tables ascended noiselessly through a trap door, delicately set out with pleasing viands, most of which were new to me. Animal food was not present, and the articles of diet laid before us were chiefly vegetable nitrogenous products made by the fixature of nitrogen. Thus we had vegetable steaks, partridges, and so on, which contained all the nutriment of beef and bird without their heaviness, and were exceedingly palatable. Among the liquids we

had a new sort of milk somewhat resembling koumiss, but with a daintier taste and a delicious fragrance; also sparkling coloured water and a compound called "Life-brew," which was as stimulating as wine, but more sustaining, and non-alcoholic. Alcoholic drinks, I learned, had gone out completely; not by law, but by common-sense, and were used only in medicine or for the punishment of criminals, in rare cases. There was nothing that malefactors dreaded more than a sentence to a month or two of rum, whisky, brandy, or even champagne diet.

I took no note of time, for my three-century sleep had made me almost proof against fatigue. Besides, I was told that the general system of living now, with the night made practically day by subdued and diffused electric "glow-worm" lighting, and with every known means in use of conserving energy and nerve force, had changed the old habit of sleeping and waking. People now rested frequently, nourished themselves scientifically, were able to be up and about at all hours of the night and day; and instead of working a long time at a stretch and then recuperating by exaggerated late night amusements or long periods of sleep, they intermingled brief times of work and play and slumber through the whole twenty-four hours.

Suddenly there came the rapid tinkling of an electric bell—soft and musical, as all sounds were, I noticed, in the new civilisation; and Hammerfleet cried, "That's from the Mars telegraph."

We all hurried to the station, and there found this message: "Our missionary, Zorlin, started hours ago. Will be there with you immediately."

It seemed no time at all before there was a rush and a thud outside the station, and Glissman announced that these sounds meant the arrival of a stellar car on the receiving platform.

He was right. As we threw open the door, two strange figures came staggering in. One was a sinewy, blonde fellow, limp and tired, as though he had passed through about thirty-five thunderstorms.

"Bronson?" exclaimed my friends, astounded.

"Yes, I'm here," he affirmed. "And this is Zorlin."

He pointed to his companion, the strangest resemblance of a man I had ever seen; of giant form, and with a face of overpowering intelligence, but at this instant crouching to the floor on hands and knees, half helpless.

"Your atmosphere is so heavy," he said

in fairly good English. "I can hardly bear it yet. But I will soon stand up." He shook his vast head of hair and beard; then heaved a mighty breath, struggled to rise, and sank into a chair.

This was our missionary.

#### IV.

##### THE NEW EARTH.

When the travellers had been refreshed and revived we drew from Bronson an account of his interstellar adventures.

"As I came near Mars," he said, alternately twirling and biting the ends of his long and warlike yellow moustache, "I was aware of strange rubbings alongside the car, and occasional shocks as of hammer-blows. Satan, I suppose, is called 'the Old Boy,' because a boy is the personification of mischief, and second only to Eve in making trouble. My first idea was that the Old Boy was having fun with me, by throwing stones. A rapid survey through my peep-holes showed me I was so far right—I was caught in a meteor-storm. Fortunately, though, the meteors over there do not shoot so recklessly as those that come near earth. They move with a velocity in accord with that of Mars, so that they drop through its atmosphere 'as the gentle rain from heaven.' But they gave me a pretty hard time of it, steering clear of them; and there may have been some magnetic stress accompanying their flight that carried me out of the way. At any rate, it was a long time before I could make a landing. But, with my automatic drag-net lowered from the bottom of the car, I managed to catch two small meteors, which I used as a combined anchor and rudder, in conjunction with the adjusted Helium screen, and finally reached terra-*Martis* long after the observers there had given me up. Once safely aground on the planet, I found Zorlin all ready to embark; and we decided to come right back."

"But they had promised he would come without you," Stanifex interposed. "How could he ever have done that?"

"Ask him," Bronson suggested, pulling his moustache wide at both sides defiantly.

"And can we talk English to him? Does he understand?" Electra asked.

"He has the most rapid intelligence I ever met," answered Bronson. "I had to teach him most of the English language on the eight-hours' home trip; and he took it all in like water, as fast as I could pour. That is what has fagged me out so." And the stellar aéronaut helped himself

to a vegetable chicken-breast, and swallowed a draught of "life-brew" at a gulp.

By this time Zorlin had straightened himself up, and seemed to have grown perceptibly in height and breadth. He was conquering the atmosphere of earth; and after a single sip of sparkling tinted water, he spoke.

"I would have found a way to come," he said easily, yet with a strange accent; somewhat as though his words were snow-flake crystals, cold at first but melting as they fell. "We had not thought it worth while; but you have made so much advance lately that it seemed best to help you. We Kurols move by will-power. It is said many of our people have come to you secretly before. We know a great deal about your life. But until just now it was against the law for our people to visit earth; it lowered them, and always did you harm, and caused wars among you, much against our will and desire. Even now, I fear my coming will make disturbance."

He was like a man, but endowed much above a man, and with something weird and incomprehensible about him.

"Will you not tell us something about Kuro?" asked Graernantle serenely. He was the only one of our group who seemed anywhere near equal to Zorlin. "Or would you prefer to rest?"

"The first duty of a missionary," Zorlin made answer, "is to learn about the country or the world he comes to. After that he can tell things. Not now. I learned much of your speech from our star-talk, the rest from Bronson. But now let us wait."

We waited accordingly, for the hour was near dawn and streaks of morning were faintly hinting at day in the east through the windows, and even Glissman's spectacular eyes looked a trifle dim and weary.

When we rose some three hours later in the glory of a crisp and cool forenoon of autumn it was decided that we should begin a jaunt of observation through the country, back to New York. This was partly for Zorlin's benefit, but it suited me equally well, since I was almost as much a stranger as he. For convenience we took the walking balloon down the mountains, as this was the pleasantest conveyance over rough ground where there were no large air-ships handy.

This vehicle is a shallow car with small hollow sails of silk above it, containing just enough gas to keep it about thirty feet

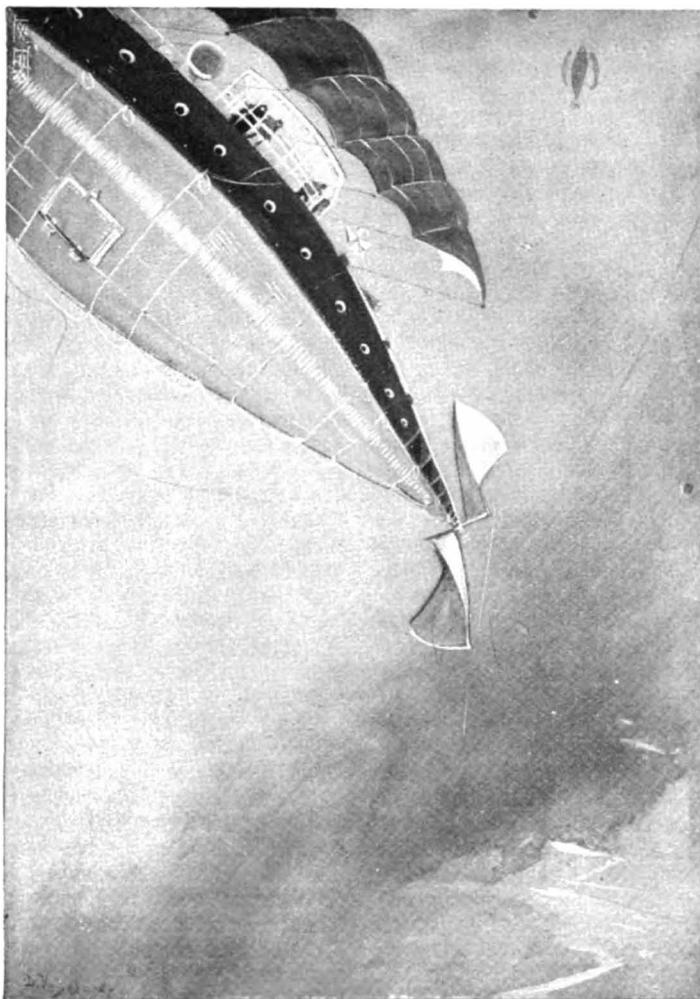
above ground, assisted by a small electric engine in the centre. From the bottom of the car two long rods or mechanical legs, made of aluminium—the lightest metal known—extended down to the ground, where they are reciprocated at regular intervals by an electrometer, which enables them to imitate the motion of walking, and carry the balloon along at the rate of some fifteen miles an hour. They are not meant for high speed, and can travel only, of course, on prepared routes, but are very convenient in certain places.

Air-cutters and the larger air-ships are employed for flying in any direction and with much greater velocity. They are on an entirely different plan from the flying-machines which were announced but had not yet come into use when I was last alive. The present air-ships apply the principle shown, for example, in the rapid flutter of the bumble-bee's wing. This is the "shutter" principle. The ship itself is built of latticed aluminium strengthened with a small amount of copper, and enclosed with transparent celluloid for protection against weather (celluloid now being generally used in place of glass). Through the centre of the floor are thrust four short aluminium tubes three feet in diameter with three feet of length below, and these are each filled with 2000 very thin celluloid shutters, so arranged that they can be thrown upward, presenting only their thin edges to the air, offering no resistance to it. The instant they are turned down flat they prevent the passage of air from below, and so compress it into great density. "The inertia of the air in the tubes, you see," Hammerfleet remarked, "makes it like a rigid column—more rigid than steel. This forces the car upward when it starts, and it ascends on the top of a continually heightening pillar of air which holds it up buoyantly and firmly. The 2000 shutters in each tube work between balanced springs, and reciprocate at the rate of 15,000 strokes a minute—that is, they open and shut 250 times every second."

The motor by which they worked was, I thought, very ingenious. It is a small electric engine of eleven-horse power, set between the tubes, and has an armature of the finest chemically pure iron wire, wound with silver and insulated with collodion reduced by chemical means to cellulose. The armature, by an automatic device, is balanced to suit all degrees of speed, and has a revolution of 15,000 per minute. The reciprocating parts are of aluminium; the bearings are compressed

graphite, lubricated with a volatile oil kept viscous by solid carbonic acid held in a box on the bearings. The motor and mechanism weigh only one hundred and twenty pounds; and the electricity is generated by oxidising gas-retort carbon

controlled in two or three ways; the usual one being by ordinary artificial silk sails, together with a large rudder of stretched silk for tacking and steering, as on the water. By using an aluminium screw, with an auxiliary engine, instead of the



AS WE FLEW ALONG.

in fused soda, with oxide of copper as a reducer.

The idea of the ship is radically unlike former machines, which either depended on disturbing and churning up the air or relied on aeroplanes or the rush of air under an upward slant.

This latter and successful contrivance rests on the solid building up of a compressed air foundation beneath it, so that it cannot possibly fall. The direction is

silk rudder, one is independent of the wind, and can raise the speed of the airship to between sixty and eighty miles an hour.

At the foot of the mountain we changed to one of these equipages, and, as we flew along, we saw many others scudding by in all quarters, far and near. The flotation sail—*i.e.*, the hollow silk sail inflated with gas—I learned, had come into universal use for water-vessels as well,

and had added immensely to the speed and excitement of yacht-racing. In fact, as we skirted the great lakes and passed over rivers and ponds, I had a chance to observe craft of all sorts and sizes with these sails, whizzing like arrows before the wind or leaning gracefully away from it and skimming the liquid surface as lightly as water-bugs, but much more beautiful and useful in their movements.

The shutter principle, also, Graemantle told me, had been adapted to steam-ships, or, rather, electric ocean liners and freighters; by using several hundred thin blades at the stern, in lieu of the old propeller, and also on the sides, which—by direct thrust when turned flat against the water—utilised the motion of the waves to condense air, and drove the vessel forward. Sun-engines, which derived electricity directly from sunlight, and another process that extracted it from coal in cloudy weather, supplied the motive power; and electrolysis along the sides of the ship reduced the skin friction of her passage through the deep.

Here and there Eva and I noticed, with curiosity—and Zorlin was with us in this—certain little air packets that were flying around—"all by their lonesome," as Eva said—always north and south and east or west. They were too small for anyone but a pigmy to hide in, and, in fact, there was no one in them. They went automatically. Zorlin, at last, was unable to maintain his reserve any longer. "What are they?" he asked.

Hammerfleet came to the fore with: "Merely express and mail carriers. We have any quantity of them all over the country and the world. The magnetic lines generally keep them straight on their course; but if they are blown aside, a current is generated by their mechanism which puts them in line again. An automatic aneroid barometer, working a valve, keeps them at the right altitude."

"But where do they go to?" asked Eva.

"Look now this minute, and you will see. Watch that one. You notice it is driving straight for that tall skeleton wooden tower yonder?"

"Yes."

We fixed our gaze upon the tower. The little express carrier drew near; and, as it touched the top of the tower, was clutched and held firm by an iron frame which caught its sails and stopped it. Then a man in the tower began to unpack the contents of the carrier, and sent them down by chute to an enclosed yard below.

"But I don't see why you need these things, with all your other facilities for transportation," I objected.

"They save an immense amount of bother and of surface traffic," said Hammerfleet, "besides doing away with hand labour. They are also very swift."

"I should think, though, they could easily be robbed by air-thieves."

"No. That almost never happens. There are too many people watching. A thief in the air is much easier to deal with than a thief on the ground. He has no obscure refuge; he is in full view. A limited number of police air-boats can give all the protection we need for carriers. They patrol the routes, and carry grappling-hooks with which they can easily arrest any prowling thief-car."

I seemed to win the secret, eye-winking approval of Stanifex, the official sceptic, by asking somewhat peevishly—"What is the use of all this air traffic, anyhow?" I felt a desire to combat Hammerfleet on any subject that came up, because he was jealous of me, or I of him—I hardly knew which—regarding Electra. It also irritated me that he was so well informed as to the details of the twenty-second century, when I felt that I had just as good a right to be in it as he.

"Why, my boy," he replied, with a patronising emphasis on the word "boy," "don't you see that it is an immense relief to the congestion of surface travel to have all these other means of conveyance? Civilisation and the general occupancy of land have spread to such an extent that we must economise ground area. Formerly, human beings, in their degraded desperation, actually burrowed underground like moles, to get from one point to another. *We* rise into the pure air instead. Land, and the right in it, are enormously valuable. Air costs nothing. The race claims a certain right in the air, though; and franchise dues are paid to the people by public vehicles; while private ones are subject to a small tax. Air-ships are not so reliable as other modes of locomotion, but they relieve the railways and highways, and are immensely useful in sailing over mountains, deserts, forests, or impassable rivers, and in times of freshet and flood, besides their ordinary uses. The air-ships have also been of vast service in Polar and African exploration. You ought to realise that our population is large, and is spread out all through the country. So in order to accomplish traffic easily, it is best to divide it between earth and air. We do not live in large

cities now, and we have to have plenty of room."

What he said was entirely justified by the landscape beneath us, where we could see the country beautifully laid out in small towns, villages, and hamlets with perfect roads leading from one to another, and large groves or tracts of wild woodland interspersed. Every acre of the open ground, excepting the fields reserved for sports and public meetings, was thoroughly tilled, with electric arrangement for the fixation of nitrogen in the soil, so as to produce vegetables containing sustenance like that of meat, and for raising apples, pears, and peaches a foot in diameter by electric light, and other fruits in proportionate sizes.

Our first stop was at Chicago, which we found was simply a vast trading post, a business fort or stronghold—like all other cities now—where a garrison of clerks and other labourers was stationed in the immense buildings once teeming with superfluous people. This garrison attended to business details with military precision, and was relieved at intervals by other men and women drafted from the population for the same purpose. All around Chicago were the impressive ruins of various World's Fairs, these institutions having now become obsolete. The ruins had been carefully preserved, and drew many thousand sightseers and tourists every year, who paid a small fee in memorial silver for the privilege of viewing them. These fees were afterwards distributed in charity, and caused a good deal of grumbling because their value was so small.

## V.

### THE FOREST OF STEEL.

When we descended from the air-ship at Chicago I was horrified to notice that Eva retained the hideous old feminine nineteenth century habit of grabbing her skirt violently at the rear with one hand and holding it up, ostensibly to prevent its dragging on the pavement. She did this only on street crossings or wherever, according to her theory, there ought to be dust or dirt or mud or dampness—no matter how dry and clean the crossing might be. Then she would complacently let the skirt fall again and trail at will as a sidewalk sweeper, with the proud consciousness that she had done her whole duty. I wondered whether our vanished sisters of the past had ever realised how objectionable they made themselves

appear by this ugly trick, and what would have been thought of men if they had adopted the custom of hoisting their trousers by such a rearward seizure.

There was not much to be seen in Chicago beyond the big garrison buildings, from fifteen to twenty storeys in height, and the deserted streets shaded by these piles of stone. No one lived in the city now unless drafted by Government and compelled to do so. There were even pleasant little borders of grass and flowering weeds along the once tumultuous thoroughfares, which were now covered with noiseless asphalt or gutta-percha pavement; and some of the unnecessary great buildings had been allowed to crumble into mounds or hills, which were planted with trees and shrubs and laid out as pleasure-grounds, giving a variety to the topography and landscape which was sadly lacking in the old times. On the whole, we were much refreshed by the ruralisation and the quietness of Chicago; and I enjoyed some delightful strolls with Electra over the crumbled buildings and among the ruins of the ancient World's Fairs.

I could more than fancy that Hammerfleet did not approve of these excursions. He made his distaste for them very clear in his solemn, undemonstrative way. But I took the opportunity to have one or two frank conversations with Electra. Briefly, I made love to her in a strictly honourable, above-board way. That is, I explained that I had been in love with Eva Pryor three hundred years and more ago, that Eva had then rejected me, and that I had since undergone some change of feeling myself.

We were standing on the mouldering crest of the old Auditorium, the slope of which went down towards the shore of Lake Michigan in charmingly broken terraces of verdure and blossom and gurgling fountains. Electra had been recalling to me how, when women first entered politics, they had swayed large conventions of intelligent reasoning men by swinging a parasol or a flag and raising some wild shout for a candidate. But this was a so much greater tribute to the blind intelligence of women than it was to that of men that the women decided it would be more convenient to sway a small group of men than to excite a mob of several hundred or a couple of thousand male creatures calling themselves delegates. So the women had reduced the membership of political conventions to a few dozen, every man being carefully selected

for his sensitiveness to parasols and feminine influence and outcry. The lessening of the number of delegates had been a great advantage to the women, and it saved them effort, and incidentally it was good for the country. Hence there was no more need for auditoriums, coloseums, or large halls. A convention could now be held anywhere, and quite inexpensively, under the spread of a few Japanese umbrellas held by women and judiciously waved by them at the proper moment.

"Well, Electra," I asked, "why should *not* women rule the world?"

"Ah! if the world is willing," she said softly, deprecatingly.

"It would be willing," I responded; "since every man is ruled by a woman."

"But how is that?" she inquired.

"By his love for her," said I. "You, Electra, can rule me, and precisely by that means. I love you!"

She smiled, with a clear, pure, genial amazement. Then suddenly she wept; and there was the light of a rainbow on her face, the mingling of sunshiny mirth and of tearful sorrow—such a thing as I never beheld in any other woman, and do not expect ever to see again.

"Why," she exclaimed sweetly, "it gives me great happiness to hear you say so." Then, with a cadence as of a forest rill dropping plaintively into some rocky pool: "You must know that nothing can come of this. Dear Gerald Bemis, it is hopeless. I am pledged, I am bound to someone else. I am what they call a 'Child of the State' and the Government has promised me to another man."

"Who is he?" I asked, thrilled with a sudden fierce defiance of the State and of the man.

As I spoke, Hammerfleet came up behind us, over the crest of Auditorium Hill. Electra moved one hand, indicating him silently.

"You?" I exclaimed, turning savagely to Hammerfleet.

"He is the man," Electra whispered.

"I have heard your conversation unwillingly," Hammerfleet observed to me, unmoved. "But we will not discuss it. I came up here to look for you, and to say that it has been arranged that you and I shall start to-night by train for New York, and make some little side excursions on the way—so that you may see more of the country."

This announcement I recognised as a challenge and a threat, united; but I was resolved to meet whatever it might imply

unflinchingly. "Very well," I answered. "If Graemantle approves I will accept his decision."

We three then went down the hillside, not speaking further, and joined the rest of our party. Whether Graemantle suspected anything sinister in Hammerfleet's plan or not, I could not guess; but I was reassured by his approving it; since it was certain that he could not wish me any ill.

I set out that night with Hammerfleet as a sort of advance guard. Our first stop, early in the morning, was somewhere near Buffalo, when we got out and walked for a while along the highways. Here I noticed the method of getting on and off trains. The cars never stopped. A spring platform bounced passengers from the station on to the end platform of the cars, where they were received on spring cushions. In the case of quick express trains, a parallel train was run at a swifter rate along a neighbouring track for a short distance, and the passengers were hurled from this lightly, and upright into the express.

Bicycles, I found, were no longer a fad or a nuisance. Separate paths were provided for them, and, on these, electric bicycles, tricycles, and carriages were run, with power supplied from stations at regular intervals, and at all hotels, by recharging the storage batteries. Horses were but little used for travel, and existed mainly as a form of preserved life, like deer, in parks, or for racing purposes; although, even in racing, their speed was so greatly surpassed by that of flotation sails and rubber-oared boats, and various mechanical four-legged machines for running, that they were now not much more than domestic pets, like cats and dogs. However, although mowing was done chiefly by electric trolley mowers, we saw some draught-horses and carriage-horses in use on farms or on the road we were travelling afoot. In sandy regions, the wheels of horse-wagons had outward curving flanges, which prevented the sinking of sand into the wheel-ruts, and did away with friction and the loss of power by displacement of the sand. Many wagon-wheels also were coated with naphthaline, to counteract the friction and the retarding effect of mud in the roads.

Part of the way we travelled in horseless electric carriages after we grew tired of walking. Then again we took to our feet, and after a time halted before a vast expanse of machinery installed under an illimitable shed. It looked like an enormous jungle of metal mechanism.

"What is this?" I asked of Hammerfleet. "It resembles a forest, but a forest of iron and steel."

"That's precisely what it is," he answered. "And we're now going to stroll through it."

We passed in, and were soon lost in the shadows of this wilderness, where the mighty trunks and the waving branches of huge trees were represented by the uprights, beams, levers, cranks, and rods of vast machines.

"All our factory-work is done in this way now," Hammerfleet courteously explained to me. "This tangle of mechanism runs for the most part automatically, and is governed by one man. It covers many acres."

Wheels were spinning round in the most bewildering manner, huge trip-hammers were thudding down, with tons of force, in various places, and, at intervals, some great overwhelming bar of metal weighing thousands of pounds would come swinging down from the roof and almost touch the ground with a heavy swoop that meant death to any man who got in its way.

"Why," I exclaimed, "it is like the maze of life. Anyone who should pass under one of those swinging beams at the wrong moment would be crushed out as though by a blow of doom. They seem to exemplify fate."

"Quite so," he agreed.

"Let us go back," I proposed.

"No," he objected, "that would be cowardly. Besides, you cannot find your way back safely now. The same sort of steel beams are swinging low behind us as in front. If you were to turn back, you would have to run the same risk of being crushed. I am your only guide. You must go forward with me and take your chances."

"Yet," I returned, "you say that this whole forest of moving machinery is regulated by one man? Suppose anything should happen to him; that he should die suddenly; or should be asleep or fainting and incapable at this very moment. The machinery would go on, and we might, perhaps, be destroyed under it."

"This is the situation exactly," answered Hammerfleet. "The engineer is asleep. I had him drugged in advance."

"Then you intend to murder me here, in this forest of steel?" I asked defiantly, but with a decided inward shudder.

"Oh, no; I didn't say that," he returned coolly. "But I shall leave you to trace your own course; and if anything fatal happens to you it will be laid entirely to the machinery."

"You villain!" I exclaimed. "So this is your trap for me, is it? Well, it's a pretty large one for such small game, and I'll see whether I can make my way through."

I started running and dodging ahead, nimbly, but warily through the awful shadows, the bewildering electric lights spotted here and there; and the throbbing, swinging, whirling, or rising and falling masses of metal, all of which appeared to be consciously aiming blows at me.

"Hold on!" cried my enemy. "You will certainly be killed. Stop! on one condition I will help you out."

"And that?" I shouted back, pausing.

"Is that you never again speak a word of love to Electra or recur to the wild idea of marrying her?"

"Death sooner!" I retorted. "I will never consent to such a promise." And once more I started on my perilous advance through the forest of steel.

It was a frightful experience. In all my former life put together I had not suffered so much fearful excitement, anxiety and terror as were crowded into the next few minutes. A numbing chill crept up through me from my feet to my brain, and it seemed to me that I could actually feel my hair growing white.

Suddenly I thought the end had come. Everything seemed to stop. I stopped. Had I really been struck, and was I dead? Or was this merely imagination? Certainly the great moving wilderness of metal had come to a standstill. The next moment I heard an enormous ringing voice sending towards me from the farther border a loud hail: "Bemis, we are here. You are saved!"

It was the voice of Zorlin; and immediately following it came the rich contralto of Electra; "This way, this way! Come to us, Bemis."

The bright glare of a search-light swept through the darksome tangle like a ray direct from Heaven, and by it I was enabled to see my path clear. In a few minutes I had joined my rescuers, and Hammerfleet came after me with a deceitful air of solicitude relieved.

(To be concluded in our next Number.)

# IN THE DEEP OF TIME

BY GEORGE PARSONS LATHROP.

## BOOK II.—CHAPTER VI.

### IMPROVED CONDITIONS.

From the moment of my fortunate escape, Zorlin was my close friend. It was he who, by the extraordinary power of mind-reading, and the perception of distant, unseen things which his people, the Kurols, possess, had divined the plot against me and the peril I was in. He had turned the rest of the party back from their journey to find me, and Electra had caused the machinery to be stopped just in time.

To Zorlin, of course, I told the whole story; and when we reached Graemantle's house, near Ithaca, now one of the suburbs of New York, that wise man was taken into confidence. The result was a reconsideration on his part as to the propriety of letting Hammerfleet marry Electra. They were both "Children of the State," as all persons of unusual physical and mental endowments were permitted to become at the age of forty, after passing through examinations and inspection, and having their internal condition carefully ascertained by X-rays. They were then suitably mated in marriage to someone of equal standard, with a view to perpetuating and increasing the best elements of the race.

All degenerates were kept in asylums, called museums, where they were permitted to have their own literature, music, and amusements under State supervision, with an attempt at gradual reformation; and were not permitted to marry. So, too,

criminals were segregated in special districts—the men and the women apart—and were not allowed to marry; in short, were eliminated from the human family and prevented from menacing posterity, all without cruelty or capital punishment.

Now, Hammerfleet had clearly been guilty of an intended crime. He was therefore dismissed from the company of Children of the State, but not yet condemned to imprisonment.

On the other hand, though, I did not come up to the required standard. Besides, I had been only twenty-eight when I was vivisicated, and was considered altogether too young to marry Electra, who was forty-five and in the first bloom of womanhood. This made the situation very puzzling. Zorlin, however, recommended that I should not think of marrying anyone.

"In Kuro," he said one day at breakfast, "we do not marry."

"Ah! then Mars must be something like Heaven," I commented, turning to Eva, who blushed, but did not look unkindly at me. "Suppose we go there," I added.

"Will you?" she said, with an eager readiness that quite touched me. "Oh, I should so like to go—with you!"

"But how do you keep Kuro populated?" I asked Zorlin.

"We are created, in a manner, spontaneously," he replied, "by the exertion of will and unselfish desire, and the fulfilment of many conditions of life and character which you Earth people do not

understand. I am sorry to say, too, that you never can, owing to your condition, quite understand or fulfil them. You must live in your way, and can live rightly, but not on so high a plane as ours."

I noticed that he said, "*We are* created"; not "*We create ourselves.*" This led to some talk on religion, and he told us a good deal about his home planet. The religion of Kuro is much like Christianity; in fact, it is a clearer, more luminous perception of Christianity than most of us have. God is, for them, the creator; and their belief in the Redemption is the same as ours, except that they take a cosmic view of it in relation to all the inhabitants of all worlds. It is, in their minds, the key of the universe, the solution of the whole problem of life. I shall not go into the matter in this brief memorandum; for, while Zorlin showed that they recognised the sacred history enacted upon Earth as affecting other spheres, he explained that they look upon it as a manifestation of the great central verity which they can also perceive in other manifestations. That which we perceive is perfectly and eternally true; but they think they can see more of this eternal truth, or deeper into it, than we.

I hesitate to dwell on this subject, because—as usual in theological matters—his utterances caused much trouble and uproar a little later. That was what he had in mind when he foreboded that his coming would cause disturbance.

It was not long before I learned that there had been a reunion of all Christians on a great and solid basis of harmony; and the advantages of this to the whole earth were very apparent. When I looked back to my old period of the nineteenth century, it seemed incredible that human beings could have extracted and diffused from religion, which is the highest good, so much of misery and hatred.

Mars is smaller than Earth, of course; and Zorlin told us, also, that the number of people is smaller in proportion: so that there are never more than can be developed to the highest pitch of wisdom, health, and efficiency there; and he thought we might learn something valuable from this example. Their average of intelligence is very much above the human; and this accords with the law they claim to have discovered, that the inhabited planets are superior in mind and spirit according as they are farther away from the sun.

"We know more of actual natural science than you; as well as of great spiritual

truths. We are in constant mental communication with some of the planets. Besides, we learn a great deal from the meteors which fall gently into our atmosphere. These are usually fissured, and contain in their crevices the germs of plant and animal life, which we carefully cultivate and mature; so that we have large park tracts full of wonderful cosmic flora and fauna. The canals which your telescopes have discovered on our planet are, in part, a system of irrigation for these parks. By virtue of our very general and clear communion with the universe, through this and other means, and by our whole mode of living, we are able to convey a good deal of our intelligence to inanimate substances and what you call 'forces,' so that they act almost as though by a volition of their own. I am glad to see that you to a certain extent are approaching this plane, although you seem to be hampered by the necessity you feel of accomplishing results by physical and mechanical means. No machinery, however ingenious, and no amount of invention, however marvellous, will ever take the place of will-power and character. Those are the things you will have to cultivate. And you will have to cultivate restraint as opposed to expansion, with its ever-increasing laxity, if you hope to have the world wag really well."

It is easy to see how this kind of talk, when often repeated, set people into a ferment wherever Zorlin came.

He was treated as a distinguished guest of the nation and of the entire earth; and I travelled in his wake as a mere incidental satellite. My lustre as a survivor of my vanished century was eclipsed by his grandeur of interest.

In spite of what he said, I thought the earth had achieved a vast improvement. New York, like the other large cities, was now a barracks for business and storage, but was plentifully provided with shady trees and open places. Most people lived healthily and simply in the country, and could run down to the former metropolis from a distance of hundreds of miles in a very short time when occasion demanded. Here, as in Chicago, many of the tall buildings, or "sky scrapers," had been made available for landscape gardening, and there were still plenty of them left to house the poor and sick and needy. Afterwards, when I visited London, Paris, Vienna, Berlin, and other European capitals, I found the same state of things, except that their old buildings were lower. Mankind had

decided, after long experience and persistent trials, that large cities are unfit to live in; and the human family, when crowded so closely in a limited area, become dirty and nervous, and that its abodes and the very ground on which they stand grow foul and unwholesome. Cities and dwelling-places have been voted down as outposts or annexes of hell.

They were now cleansed, renovated, and made fit for the occupancy of their business garrisons and for labourers and the poor.

Libraries were kept in the cities, and enormous numbers of newly printed duplicate copies of books, ancient and modern, were sent out to subscribers, or sent free to people in the country; or the contents were transmitted to anyone, anywhere, by phonograph and telephone. Similarly, theatrical performances were given publicly in every rural district or in any private house, by kinetoscope or vitascope, with or without words; but this did not at all interfere with the performance of living actors and actresses, who likewise furnished the original performance for vitascope reproduction, and were able by means of this same invention to give permanent records of gesture and expression for the benefit of pupils in the histrionic art. Collections of paintings and sculpture, instead of being exhibited for a limited time in some one gallery in a city, were carried round to all quarters of the outlying regions in compact and commodious cars built for the purpose, vastly increasing the market for the works of artists.

Everybody, in short, had civilisation brought to his front door, wherever he lived, or within easy reach of his home by walking balloon or electric bicycle.

Gas was used almost exclusively for heat; and electricity for lighting. Electric lighting had been brought to a point of perfection that made its radiance soft, diffused, and clear, without undue sharpness; and the eyesight of human beings had greatly improved in consequence, near sight and blindness having been much diminished.

Starch, sugar, and protean substances were made in immense quantities by factories on the Amazon, in Indiana, and in Africa, from wood fibre, by chemical transformations—the construction of the molecules of carbohydrates and methods of rearranging this construction having been discovered, so that no energy was absorbed or given out in the transformation. Thus, food of a simple kind was

amazingly abundant and cheap. Artificial wood, also, was made from compressed chloro-cellulose and talc, with a solvent, and disintegrated by water under pressure.

Artificial leather was produced by the electrical fixature of nitrogen in carbohydrates. Shoes were moulded directly from this material, one machine making three hundred pairs of shoes in an hour. They were afterwards passed through another process to make them flexible, and the porosity of the leather was varied to suit different climates, shoes for damp climates having large pores and those for dry regions having pores that were infinitesimal.

Food and clothing provision, therefore, and wood for building were as abundant as could be. Forest preservation was also carefully attended to, with the best effects on climate and water-supply. Bricks were made six times as large as the old style, and dried in roomy iron chambers with fifty per cent. of sand to prevent shrinkage. They were then hoisted into place in large quantities by a machine and laid—several courses at a time—with a cement mixed of lime, clay, and nitre, which produced intense heat and fused the masonry into a solid, permanent mass, so that ordinary house-building was very easy.

Then in respect of health and bodily comfort, a method had been perfected of causing new teeth to grow by means of calcareous, antisepticised bandages.

The wise men of the race had determined that the white corpuscles of the blood are the policemen of organised beings against microbes. By the education of these corpuscles, and inuring them to microbes of every kind, they were made capable of resisting the attacks of the enemy; and even chemical poisons were rendered harmless by the training of the white corpuscles. A compound virus had likewise been discovered and brought into use, consisting of the weakened cultures of rabies, consumption, diphtheria, cholera, splenic fever, erysipelas, typhoid, yellow, scarlet, and malarial fever, and several other diseases of microbic origin. Children received an inoculation with this virus once in seven years, by compulsory law; and the diseases against which it was directed had become rare.

In addition to all this, it had become possible to manufacture pure diamonds by subjecting prepared metal crystals to the action of time, heat, and pressure, while immersed in bisulphide of carbon, in bulbs of pure quartz. By a magnetically deflected arc, the surface was plumbagoed, and pure

iron was electroplated over the ball until it increased to twenty times its original diameter. Then the whole was submitted to a gradually rising temperature until the softening-point was reached. Gold and silver were obtained by the reaction between volatilised sulphur and iron, in graphite tubes separated by a porous partition, and raised to 7000 degrees of Fahrenheit by superheated gases, and this had brought about a change in the currency system. Platinum was now the standard of value. Its rate of value was very high, and very little of it was ever seen in circulation; but it made a solid basis. The general currency was based upon the value of permanent taxable property; but this value was scientifically measured, and subject to very little fluctuation. It acted, however, as a balance wheel, controlling expenditure and speculation; and speculation, as it used to be practised, had almost ceased.

With such advantages and improvements—and I may say that during a brief flight through Europe and the Americas, and the regenerated empires of China and Japan, I found much the same state of things prevailing—it would seem that people ought to be contented. Government, too, is now much more satisfactorily conducted, by small, efficient, and responsible committees, though on a republican plan, instead of by parliaments, congresses, and mobs, as of old. The "federation of the world" has been achieved. The nations of Europe and Asia, with Africa, in their several unions, co-operate with us through a world Committee of Twenty; and the fierce light of honour and responsibility and watchfulness that beats upon these Twenty gives them no chance to fool or prevaricate with the race. Besides, they do not want to do so. It is happier and pleasanter to be honest, and is the highest kind of diplomacy.

The general agreement has brought into play the best, the only true free trade. Every country says frankly what industries it wishes to maintain, according to its condition and needs. Every country is self-reliant and, so far as possible, self-sustaining; and the various countries work together for the good of the whole of mankind.

Co-operation has taken the place of hostile competition.

War is at an end. A single old hulk, now, mounted with a telescopic gun, can settle an angry dispute from a distance of two score miles. A telescopic cannon sends forth another smaller cannon which is protected by a secondary air-chamber containing a lesser explosive to counteract

the first explosive pressure. This cannon, in turn, generates another one, and the final cannon discharges upon the doomed point or city a bursting projectile which destroys more than could be restored in fifty years.

Still, mankind is not satisfied. There are always people now, as formerly, who drop to the rear of the procession, and there are always passionate and criminal impulses.

## VII.

### THE SUN-TELESCOPE; AND DEPARTURE.

Graemantle's Ithacan villa was a vast establishment, adorned with all the magnificence now so easy—diamonds, emeralds, and rubies set in the walls for decoration; beautiful wall-paintings, tapestries—with amusement rooms for theatrical performances, and an Odorifer and Coloriscope. These contrivances were something like church-organs, but filled with clever mechanism that produced new effects. The coloriscope had innumerable opening and closing shutters that revealed different colours in pleasing succession or in union, like that of musical chords; and the odorifer was provided with a great number of tubes that sent forth delicious and varying perfumes, either singly or in harmonious combination. But I was still more interested in the sun-telescope—not far away from the house—which was a scheme originated by Gladwin. The Society of Futurity had kept it up, but had never got any definite results from it.

It was rigged somewhat like the Mars magnetograph, with poles and wires around a large circle, but had a telephone receiver attached to it.

Through this receiver we could hear strange and awful moanings, but no one had ever been able to get a definite message from it. Zorlin insisted that, according to Kurol philosophy, the sun was the abode of lost souls.

"Do you mean to say," I asked, "that what we regard as the main physical force of light, warmth, life, and heat is Hell?"

"Yes," he affirmed. "Why should there be any question about it? You earthlings debate as to the existence or non-existence of Hell, and there it is, staring you in the face, all the time. Of course it warms and cheers you when it shines moderately. But you cannot look at it with the naked eye without suffering a horrible shock, or even blindness. Are not its effects in summer fiendish and intolerable? And when it shines too

intensely, does it not drive people mad and cause epidemics of wrath and suicide? Also it seems quite reasonable that malefactors, lost souls from this earth, should be utilised by being contributed to that immense combustion which gives useful heat and comfort to you here. That would be a sort of compensation for the evil they did while on this planet."

It was a curious notion, not entirely new to some readers and thinkers; yet it caused much dispute among the people he met.

After that, I never could listen to the dreary groanings of the sun - telephone without thinking of what he said. Perhaps this strengthened the desire that was rising in me to get away to some serener clime and *entourage* than this earth's. Then, too, in spite of all obstacles and opposition, I could not give up the idea of winning Electra.

I had talked with Zorlin about it; and while, as a Kurol, he could not quite approve my marrying, he at last consented to accompany me if I could induce Electra to leave the country—in brief, to elope with me.

Going to her, I used all my faculties of persuasion, but she would agree to nothing more than to make a brief tour around the earth with me, on condition that Zorlin should go with us as counsellor, companion, and friend. It must be done, however, I told her, without the knowledge of Graemantle, and especially without that of Hammerfleet, who was still at large, although he had been excluded from the house, and was not allowed to see her.

This was how I came to make my trip to Europe and other parts of the globe, and to observe the new state of things everywhere; and a wonderfully interesting and delightful trip it was. But several things prevented it from becoming a genuine elopement.

In the first place, Electra held to her idea that she ought not to marry me. In the next place, Zorlin, being with us, was similarly inclined to prevent my marrying Electra. And finally, just after we had embarked in the commodious air-ship which I had engaged for the journey, I found that Eva Pryor had been smuggled aboard by Electra, and was to be one of our party.

The noble Electra fairly laughed in my face when Eva appeared from the cabin; though she laughed with such good humour and grace that I could not possibly take offence or do anything else but admire her. What impressed me also very favourably was that Eva had

abandoned her dreadful nineteenth century costume and was dressed in the peaceful and becoming robes of the new day; for this I took—perhaps conceitedly—as evidence of a gentle and womanly desire to give pleasure to me.

There was soon a very exciting flight and chase; for both Graemantle and Hammerfleet, on learning of our departure, followed us in different air-boats.

It was a wild career, indeed, high in air above the whirling globe; but I shall never regret the impulse which led me into it, because we had so many adventures and such charming talks—Electra, Eva, and I, with the missionary from Mars; and because I learned so many things about the temporal advancement of men in this new age.

Ascending from Fire Island at dawn we swept southward along the Atlantic coastline, our ship flying through the atmospheric expanses like a huge bird, without effort. Never shall I forget the exhilaration of that moment and of the next few hours. After the first surprise and disappointment of finding that Eva was with us it was astonishing how soon I reconciled myself to the situation. When you are separated from your own century and all your accustomed surroundings and thrown into the air, even with one of these marvellous boats to float you, there is a sense of desolation in your grandeur which induces an unexpected humility and makes it very comforting to have near you the woman you loved long ago, even if you have decided that you no longer love her. As the days went on and we were held together in this close neighbourliness, I became more and more conscious of something in Eva that soothed me and sustained my cheerfulness. She was so quiet, so resigned, so friendly that I began to like her companionship exceedingly. In some way also which it is hard to define, I could understand her, and she could understand me better than the new woman Electra and the Mars missionary Zorlin. We all, however, seemed to be placed in a new relation, which was much more satisfactory than the relations of people in the old, noisy, restless nineteenth century. There was no effort among us to keep up conversation, or, as the ancient phrase put it, to "entertain" one another. Each of us occupied and amused himself or herself independently. When conversation became natural or useful we conversed, but there was no occasion for the two women to be silly or vain in order to attract the attention of the two men, Zorlin and myself;

and, on the other hand, he and I did not feel called upon to put ourselves into an artificial mood in order to suit some fantastic requirement on their part as to what we ought to do for the purpose of pleasing them.

For the first time in my experience I enjoyed the pleasure of a quiet, healthy, unforced intercourse with other beings of my own kind, and with a guest from Mars who was so nearly like us.

Just as we came over Cape Hatteras we saw, by the aid of a strong field-glass, that Graemantle and Hammerfleet were following in our track; and almost at the same moment a threatening cyclone rose from the south, over the Gulf Stream. Our navigator avoided the cyclone with great skill. As everyone knows, storms of this kind, born of the wild union of cold air-currents with tropic heat and moisture rising from the Gulf Stream, pass inward to the United States and follow a long parabolic curve through that country, darting out seaward again at some far north-eastward point. We turned our rudder and flew east over the sea, so as to keep clear of the edge of the enormous tempest as it whirled in over the land.

It was a magnificent and impressive sight, and so absorbed were we in gazing at it, that only at the moment when we were escaping the tail of the cyclone did we observe that Hammerfleet's air-ship had sailed into the main body of it, was spun round like a top in the swirl of mist and wind, and then was broken and thrown down, a wreck, to the ocean below.

Although I was rather exultant over his disaster, I made a prayer for him, for I did not think that he could come out from the ruin alive, and certainly did not wish him any evil, either in this life or beyond it.

It turned out that he did escape whole; but we did not know of this until long afterwards.

At Cuba we stopped to renew our batteries, take in provisions, and rest. We found the island peaceful, happy, and prosperous under a limited Republican Government, and free from all nightmares of tyranny, either white or black. From there—believing that we were now quit of Hammerfleet, and having decided to convert our journey for a while into a tour of observation—we darted over sea and land down to the Amazon country. We were received at Para by a branch of the Darwinian Society, and, on their extensive plantations, were attended by apes whom they had developed to an extraordinary degree. These apes had arrived at a fair

imitative proficiency in human language, were skilful in agriculture, under proper direction, and made very good servants for the rougher and simpler kind of house-work, or for carrying baggage and the like.

One of the most interesting things in the Amazon region was the fact that large tracts of country had been sterilised by saturation with petroleum. This prevented excessive vegetable growth, and enabled the inhabitants, with the aid of great syndicates, to carry on a normal and highly profitable production of rubber trees, and of forests, the woodfibre from which was turned into food and various useful tissues. All sorts of food was manufactured here from wood cellulose with inorganic salts of potash and sulphuric acid, and by the action of bacterial ferments.

Here at Para, also, is made a large part of the world's supply of artificial silk. The disintegrated cellulose of the food-factories, after being thoroughly bleached to dazzling whiteness, is dissolved in one of the chlorinated alcohols, under pressure, to a glossy mass. This is afterwards put into a cylindrical hydraulic press and forced through plates filled with innumerable small discs of sapphire, through every one of which a hole one-thousandth of an inch in diameter is bored by diamond dust. The fibre, when it reaches the hot air of the room in which the press is situated, shrinks immediately by the evaporation of the alcoholic solvent, and is put at once on to reels. The entirely amorphous character of the material and the perfect surface of the sapphire die produce a fabric far more dazzling and beautiful than the silk formerly obtained from the silkworm.

Not knowing what had become of Graemantle, whom we had lost sight of when we were dodging the cyclone, and not wishing to be overtaken and interfered with by him, we had to hurry away from Para and the Amazon. Travelling mostly in the early evening or the early morning, when we were less likely to be observed or followed, we zig-zagged through the air over Brazil, crossing the Andes two or three times from east to west and back, and than bearing down to Chili and the Argentine Republic. Everywhere in those regions we found the same system of building in use which had aroused my admiration in the United States. This is the "plastic" system of moulding edifices, still more effective than the fusing of bricks into solid masses, which I have mentioned before.

By the plastic method immense palaces

are reared for the ordinary dwellings of the rich, with miles of terraces and raised gardens, towers, domes, and long vistas of pillars, surpassing in grandeur even the imaginative conception of ancient Carthage as depicted by the old English painter Turner. State Capitols and all Government or municipal buildings and numerous vast churches filled with gorgeous chapels are built on even a greater scale of magnificence and massive proportions, in designs of exquisite beauty. Large corporations erect their structures by means of iron moulds of every variety, all capable of being assembled like parts of a machine, and producing unitedly the total architectural effect desired. These moulds are set up in position to form the whole house—the walls, doors, partitions, pillars, ceiling, and, with the aid of iron beams, the roof. The moulds are faced with beautiful figures, and also, where appropriate, with sculpture in bas-relief. They are made from models supplied by the very best artists, working in harmony to secure the finest result; and, therefore, the effect of the building, when created, has nothing cheap or mechanical about it. When the moulds are all in place great iron tanks are brought to the spot, containing a stone-like semi-fluid mixture, which is pumped through pipes into the moulds. In three days this mixture becomes perfectly hard; the moulds are taken away, and a complete house or immense palace or cathedral stands revealed. Whole mountains are crushed to powder by gigantic machines, to furnish material for the plastic mixture; and many of the superfluous buildings in the formerly overcrowded cities have been ground up for the same purpose. A palace which would formerly have impoverished the richest of men, or even a prosperous State, is now put up and finished—except for the interior decorations, which must be done by hand—at an expense which among the ancients (of whom I was formerly one) would hardly have paid for the modelling and chiselling of a single great statue.

We extended our journey, with various pauses for rest, and frequent trips by electric trains on land and then by ocean shutter-vessels, to the Antarctic Continent, where the greatest surprise of all awaited me in the large and flourishing community of two or three million beings inhabiting the interior of that ice-girt region and rejoicing in the genial warmth diffused by its central volcanoes? But now I must speak of a thing which had worried us more or less, all along, and eventually brought our curious escapade to an end.

### VIII.

#### SEA-SIGNALLING—THE FINAL FLIGHT.

We had noticed at times when the sky was cloudy, both by day and by night, certain periodic flashes of light appearing on the clouds in quick succession. Electra told me that these were caused by the system of cloud-telegraphy now in use; and to anyone familiar with the Morse alphabet, as I was, it was easy to read the messages so flashed about the heavens, though I could not understand those which were in cipher. Most of them were of a general nature, and had nothing to do with us. But at intervals we observed that telegraphic inquiries were being made on the clouds about our party, and that certain persons whom we were not able to identify—most of them signing these communications with numerals instead of names—were answering those inquiries. I may as well jot down in this place the information I gathered as to the mode of signalling by cloud-flash and by other new methods.

Powerful electric rays are, by means of lenses, brought to thin pencils of intense light. A single one of these is then projected upward against a cloud. A controlling shutter in the path of the beam of light interrupts it at will, so that it may be made to show long or short flashes on the clouds. Words are thus illuminated in the sky, and made to shine in the zenith repeatedly, until an answering reflection is obtained. The chief use of this cloud-telegraphy is, of course, on the sea between ships and "steamers" (as they are still called, notwithstanding that they do not use steam) or for air-boats. Conversation may be carried on in this way between vessels many miles apart; and a message received by one can be transmitted to others, so that inquiries and replies fly all around the globe and to remote parts of ocean. The system was found useful in those later voyages to the North Pole, which have not been followed up since a general exploration of the open Arctic Sea was effected. It has also saved many lives, prevented collisions, and caught many fugitive criminals. Sailing vessels are provided with a water-paddle to drive the necessary electric generating mechanism for signalling when the ship is in motion.

In some of the much-travelled sea regions, another method of communication is used for the day-time. A sail-cloth, woven with metallic wire, is hung between the tips of two masts, and is connected to

a special electric generating apparatus producing waves of extreme sharpness and great intensity that follow each other at the rate of seven hundred per second. An electric stress thus propagated to infinite distance is, at moderate distances, strong enough to be collected by the metallised sail of another vessel. One ship, for example, wishes to know whether there is another within the area of signalling, but out of sight. The musical note formed by electric inductive waves is set going, and, by means of a key, is stopped and started again at will. Other vessels in the area have watchers who, at intervals, listen to an exquisitely sensitive telephone made selectively sensitive to waves of exactly seven hundred per second. This is brought about by a tuning-fork attachment to the diaphragm, tuned exactly to respond to waves of that rate; hence, although the part of the waves collected by the sail-cloth is many million times less than could be gathered if it were close to the signalling ship, yet the tuning-fork collects successive waves until the amplitude of vibration is sufficient to cause audibility. The signalling current is continuous for several seconds. Then the transmitting vessel stops it and connects the sail with its receiving apparatus to listen for a return wave. After the preliminary signals have been exchanged, conversation is carried on in the usual way. It is slow, of course, owing to the time necessary for the successive impulses to rise to the point of audibility; but the method is very accurate and reliable in all but foggy or rainy weather.

For foggy weather signalling there is still another ingenious device. A circular hole, about two feet in diameter, is cut in the vessel below the water-line, and closed by a circular steel plate or diaphragm one-eighth of an inch thick. On the inner side of this there is a thick iron chamber, completely inclosing the space behind the diaphragm; and here is placed a small, shrill, steam whistle, worked by compressed air or steam, and controllable by a valve or key. Alongside of this apparatus is another diaphragm made like the first; but there extends from the centre of it a very short fine steel wire, highly stretched, the other end of which is connected to a sensitive diaphragm, from which tubes lead to both ears of the signalman. By an adjustable attachment this steel wire can be regulated to greater or less tension, as a violin string is, and it is tuned to respond to the note given out by the whistles on other steamers, which

are all of precisely the same pitch. In fogs the signalman alternately sounds the whistle and listens for a return, his receiving apparatus not being responsive to any other sound than that to which it is tuned, beyond the rippling or dashing of water on the sides of the vessel and the movement of the propelling shutter machinery, which are continuous and do not interfere with the signalman's hearing a periodic musical sound. The sound-waves of the whistles are communicated to the water by the steel diaphragm in front, and travel through the sea just as in air, but much farther, since the conductivity of water for sound is greater than that of air. One of the most important uses of this machine on large passenger ships is to ascertain the direction of approaching vessels with exactness, and for this purpose they have two sets of diaphragms on opposite sides of the ship, connected telephonically.

Still another contrivance for preventing collisions or giving notice of the nearness of icebergs or derelicts impressed me. This is "the automatic pilot," a small cigar-shaped copper vessel some fifteen feet long and twenty-four inches at its greatest diameter, having within it an electric motor which drives a screw-propeller at its end. From the masthead a reel passes two insulated wires, which run from the ship's dynamo electric engine, down to the cigar-shaped "pilot," to which they are joined side by side, about two feet apart. They not only carry electricity to the motor of the pilot, but also cause the pilot to move in harmony with the steamer's course. As soon as the fog appears the "pilot" is launched, and the current, passing to it through the wires from the masthead, revolves the motor in the little pilot-craft and sends her shooting ahead of the ship or steamer. If the pilot tends to veer from a straight line one of the wires becomes more taut than the other, and so affecting the steering apparatus as to bring the copper boat back to the right course. I forgot to say that these wires or cables, although having only about the thickness of a knitting-needle, are twisted together from a number of very fine steel wires: and, as the speed of the pilot is greater than the ship's and keeps her about half a mile ahead of the latter, the wires always tend to become taut. If the pilot strikes any obstacle the fact becomes known at once to the man at the dynamo, and the engine is stopped and reversed without loss of time. Many serious accidents have been avoided by this



NOTHING LESS THAN A HYPNOTISING MACHINE.

precaution. The automatic pilot-boat is taken on board again, of course, when the fog clears.

It will be evident to anyone who reads this little sketch of my first experiences and impressions that, with such means of cloud-flashes and sea-signalling—besides which, it must be mentioned, the construction of ocean cables was now very cheap and great numbers of private cable-lines were in use—it would not be possible for our party to escape indefinitely from vigilant and determined pursuers. A good pursuer, by means of the omnipresent telegraph-wires and signal systems, could tap the whole earth, as a woodpecker taps a tree for his prey; and, moreover, the French Submarine Society for mapping the bottom of the sea had its under-water boats and observers in all parts of the world, liable to bob up to the surface of the deep anywhere; so that, if these were to be utilised, one of them might locate our position on or over the ocean at any instant.

However, we led our friends and enemies a pretty good chase, and kept it up many weeks. On our return from the Antarctic Commonwealth to Patagonia (now an important manufacturing country), we ascertained that Hammerfleet had survived his cyclone wreck—having, in fact, been picked up by a submarine geographical boat, and that he was using the wires, the clouds, and metallised sail telegraph to trace us. We therefore concluded to run quickly over to China and Japan, and were well repaid by the evidences of immense progress which we saw there; the same improvements that I have already described having been introduced in those countries. English, now the universal language, has been pretty well domesticated in China, though it still cuts some pigeon-wings in the dance of rustic lips. What interested Eva and me greatly, among other things, was the simple plan of making ice here, as in India and all hot countries, by hoisting balloons which carry water-tanks 20,000 ft. into the air, freeze the water and bring it down again; a constant relay of balloons steadily renewing the supply.

As we passed on through Turkey—a peaceful, flourishing Christian country—through strong and rehabilitated Greece and Italy, to Germany, France, and England, we were pleased to observe the wonderful effects obtained by the particular societies, each devoted to a specific fruit or flower, which now produced fruits of a lusciousness beyond belief, and had so

changed flowers that the mysterious something in them, called harmonic grouping, gave us an indescribable sensation of beauty totally wanting in the flowers known to the ancients. In art also the Society of Harmonic Curves has brought about great changes. The human form, in this day, is—through wise cultivation—much more beautiful than the average of old times; besides which, painters and sculptors, owing to an improved knowledge of curve-harmony, develop from the living model an ideal of loveliness and perfection formerly approached only by the Greeks, and even by them approached but partially.

This development of beauty seems to have come from a radically altered, more restful mode of life, a purer application of supernatural religion to existence, and a better realisation of the laws of natural science as in accord with religion.

So, too, and from similar causes, the great changes in manufacturing systems have benefited the race. Owing to systems for the electric distribution of power over great areas, the industrial economy of very early times had been restored. Now, among the countless homes of the people, those of the mechanics are each provided with its little workshop, where only one operation in any particular manufacture is carried out. A single part of any machine is passed from house to house until finished, and is then returned to the great assembling-shop to be assembled into the complete machine. The profound change in the moral, mental, and social condition of the working people effected by a return once more to occupation in the home, instead of the promiscuous association in large factories, has been one of the most potent agents in improving the state of the population, lessening crime, drunkenness, and other evils; stimulating true education, and restoring to labour its natural poetry and idyllic character. Thanks to the plastic process of building, even the poorest worker has his own home. With the children of mechanics learning their trade at home from the earliest years, highly trained workmen have been developed, who produce mechanisms and fabrics once thought to be impossible, and of a cheapness that is surprising. In those branches of the mechanical arts where labour cannot be so subdivided great factories still hold their place. But they are automatic—like that in which Hammerfleet had tried to entrap me—and need the attendance of only one watcher, so perfected are the science and art of automatic action by the higher type

of intellect of the modern mechanic and artisan.

There are many other things of which I would like to speak ; but I must bring this memorandum to a close before leaving earth, as I am about to do, for a voyage and an absence which may be permanent.

With all the improvements in machinery, inventions, and modes of life, human nature, also, has somewhat improved ; but it has not radically altered. Its passions, good and bad, remain much the same, together with its weakness, fickleness, and treachery. Noting this, and having seen so much of the world even in our rapid journeys, I began to grow a trifle tired of it all and to yearn for something new and for a rest. Moreover, Zorlin had stirred up so much controversy by his private and public talks wherever he went, regarding his large cosmic views in religion, philosophy, and science, that he, also, longed for return to his native planet.

It was when we had arrived at this state of mind that Graemantle suddenly came up with us, just as we alighted from an air-ship, in Norway. After getting us under thorough observation by a number of emissaries, he had obtained from the World Committee of Twenty an order for Electra as an American "Child of the State" to return with him, and he now put her under a mildly paternal sort of arrest. A day or two later Hammerfleet arrived, surprising me while I was taking a walk in a quiet spot outside of Christiania. He looked haggard, vindictive, and terrible. I nerv'd myself to resist whatever attack he might make, but I was not prepared for the particular weapon he produced. He unrolled in front of me a peculiar glittering curtain that uncurled from a rod in his hand, dropping thence to the ground ; and in a moment I recognised that it was something I had heard of but had not seen before—nothing less than a hypnotising machine !

These machines are used medically, for the investigation of nervous disorders and weak organisms ; and they are also applied officially to the examination of candidates for the Civil Service and for high office ; but the laws of the world and all the nations forbid their use in any other way.

I gazed helplessly at the glittering thing ; and it was evident that my enemy was putting it in operation. The next moment I lost all consciousness of

myself, as myself. What would have happened I do not know, for I came almost immediately back to myself, and found that Graemantle, Zorlin, and Electra had come to my rescue in the nick of time ; having been guided by Zorlin, whose Kurol mind had enabled him to divine from a little distance what was going on.

This episode settled Hammerfleet's fate. He was promptly sent back to the United States in irons, and isolated in one of the penal districts. His merely using the hypnotising machine was sufficient reason for this ; and when he saw the game was up, he confessed that his object had been to hypnotise me back into the nineteenth century, into my glass chrysalis in Gladwin's laboratory, then seclude me personally and keep me permanently hypnotised under this delusion ; which would have been practically the same as death for this world.

All through our journeyings, I had been more and more impressed with Eva Pryor's gentleness and winning qualities ; and, from wondering at first whether I had not made a mistake as to my real feeling towards her, I came to the positive conclusion that I had done so. Now that we had completed our globe voyage, and Zorlin was pining for his home on Kuro or Mars, I had a candid little conversation with her, and wound up by asking her, " How would you like to carry out actually what you once said you would do—go to Mars with me ? The Kuols don't marry, and we can act with entire consistency by being brother and sister up there."

" Delightful," she cried, grasping my hand. " Will Zorlin take us ? "

A stellar express car was ordered immediately ; and I have barely time now to jot down here that we are about to depart. Whether I shall ever come back I do not know, but my mind is quite made up that I will not come back alone.

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POSTSCRIPT BY THE EDITOR.

A.D. 2201.

Bemis has returned to earth and married Eva. " It is worth while," he says, " to have been vivified for three hundred years and to have gone to Mars in order to find out a woman's mind—and my own."