

From the Podcast Forgotten Sci-Fi

by Craig Patterson

The Retreat to Mars

Cecil B. White

CHAPTER I

The sun had dipped below the western hills, leaving a gorgeous mass of color in its wake. I stood there as the twilight arch swept up from the east, watching the shadows creep over land and sea while the faint evening clouds overhead turned blood-red under the last glancing rays of the sun.

Many times had I watched the setting of the sun and the evening shadows, while the mosquitohawks hovered overhead with their plaintive cries, or plunged whirring downward upon their prey. Never twice the same that picture held me, until the city lights sprang into being in the distance and the flashing lights of the sentinels of the coast pierced through the gloaming.

As I turned away to begin my night's work the crunch of footsteps on the gravel path broke the stillness of the evening. An elderly, bearded man approached. He had come up the trail and I had not noticed him until he was nearly upon me.

Visitors to my little observatory are not uncommon. A few, those who show interest more than curiosity, are allowed to look through the instrument, on the rare occasions when it is not engaged in photographic or spectrographic work.

"Mr. Arnold?" queried my visitor as he approached. "I hope that I am not intruding. I tried to get you on the phone today, but was unsuccessful, and having been told that I would find you here, I took the liberty of coming to see you."

"I am just about to open up for the night" said I, "and if you don't mind my carrying on with my work"

"Not at all, not at all," he replied, "I can talk to you just as well—that is, if I will not be in your way?"

Having been assured that he would not trouble me, he followed me into the observatory and watched while I opened the shutters that covered the aperture of the dome.

This done and my right-ascension circle set I turned the telescope on the first star of my evening's program.

When I had started the exposure, and entered up the necessary data in the observing book, I turned to him.

"You must pardon me, my dear sir, if I appear to be rude or inhospitable, but I am anxious to obtain a spectrogram¹ of this star before it gets too far west for observing" I explained. "All I have to do now is to keep the star's image on the slit of the spectroscope.

"I noticed that you were engaged in spectrographic work," he remarked. "How long will your exposure be?"

From his remark I gathered that he knew something of the work in hand, so I answered, "About forty-five minutes with this seeing.² It's a fifth magnitude star that I am working on. Would you care to take a look at it?"

He climbed up the observing ladder and stood beside me while I explained things to him. When I had finished he turned to me, half smilingly, and said:

"Is this seeing anything like it was last November when you made your remarkable observations of the planet Mars?"

"Apparently you have been reading my papers," I said. "No, conditions are not nearly as favorable now as they were at the time that other work was done. If I were to live a thousand years I doubt if I should ever see other nights to equal those four."

"Yes, I did read those papers of yours," he replied. "They are the cause of my presence here this evening. I am Hargraves, of the Smithsonian Institute."

I took his proffered hand. Hargraves was a well-known archaeologist, though I must confess that I should not have known of him except by chance. On glancing through "Science Abstracts" a few weeks previously, I happened on an abstract of a paper of his which aroused my curiosity, and I had looked up the original, which had proved highly interesting.

I admitted as much to him. He laughed. "We work in different spheres, as a rule" he said, "but this time I am stepping into yours. That was a great fight you had with Krüssen and his associates over Schiaparelli's "canali"

"Wasn't it," said I. "The trouble with those chaps is that they do not know what good seeing is really like. They have, perhaps forty or fifty clear nights a year, none of which begin to compare with our good nights. Then, because they have a fifty-four inch refractor against my twenty-four inch, they think that they are much better able to see fine detail than I am. Let me tell you, Doctor Hargraves, those four nights were perfect, absolutely perfect. I was able to use my highest power³ of four thousand and there was not the slightest tremor in the image. Had my driving clock been perfect, I could have photographed everything I saw."

"I know," my companion replied. "Every detail of your drawings was correct. You may wonder how I - an archaeologist know anything about the planet Mars, but I have a big surprise in store for you."

I looked at him in amazement.

¹ Spectrogram - a photograph of the spectrum.

² Seeing - the quality of the observing conditions. For first-class seeing the atmosphere must be very steady and the sky clear. Such seeing is, unfortunately, extremely rare.

³ The powers usually used under good conditions for planetary work are from 300 to 800 times.

"I don't wonder you are surprised," he continued. "I have made some discoveries that I think no one ever dreamed of. As you are probably aware, I have only recently returned from Africa after a six years' absence."

I nodded, for in the paper I have already mentioned, Hargraves announced that he had made some startling discoveries in Africa as to the origin of mankind... discoveries which overthrew previous theories about the origin of man, but the exact nature of his find was not to be made public until such time, when the records he had found hidden away in a remote corner of "Darkest Africa" were fully deciphered.

"Some years ago," he continued, "I became convinced that the rise of mankind took place, not in Asia where it is generally supposed to have occurred, but in Africa.

"This belief thrust itself upon me as I was writing a book which I never published; a book which was to have traced the migration of mankind from the place of its origin, over this globe of ours. I amassed a tremendous amount of data which led, when I came to piece it together, to Central Africa, and not to Asia as I had confidently expected.

"I searched again and again for an error which I thought must exist in my work, but the trail inevitably led to the same conclusion: Central Africa was the 'Garden of Eden' of mankind.

"As you are aware, this was contrary to all earlier evidence, so I did not care to propound my theories without further corroboration. On consulting with the heads of my department, laying the evidence before them, it was decided to organize an expedition to see if any fresh data was available on the ground itself.

"The expedition, a small one as such things go, was organized and led by myself. It was successful, but the results are not yet ready for publication. To you, however, I would like to show what we have found, the understanding being, of course, that it shall not be divulged until my work is finished. Could you come and see me at my hotel? I will probably be in town for a week, anyway."

"Why not come and spend tomorrow evening with me?" I asked.

So we arranged it.

Having finished the spectrogram, I showed my companion what I could of my equipment and turned the telescope upon a few of the show objects in the heavens, which delighted him immensely. After this I saw him safely started down the trail, equipped with a flashlight to light his way to the road, where his taxi awaited him.

Throughout the night I could not keep from wondering what Hargraves had found in Africa that could be connected with the planet Mars. The dawn found me without a conjecture and I turned in to dream wild dreams of Hargraves and Africa.

CHAPTER II

The following evening found us comfortably settled in my den. I was eager to hear his story. "I am not going to prolong my story with the details of the hardships of our journey" Hargraves began. "It is the usual stuff one reads in books of travel. Famine, thirst and fever played their usual roles, with the result that my two white companions were out of the game before two years had passed. One died, and the other had to be escorted back to the coast, where he subsequently recovered.

"With a handful of native bearers, I pressed on with the search, following every clue and rumor, only to be disappointed time and time again. We moved slowly and laboriously through unexplored Central Africa, ever seeking traces of man's handiwork other than that of the natives.

"I was laid up in camp with an attack of fever when another rumor was brought by a native who had heard of our quest. This time it was substantiated by evidence in the form of a curiously shaped piece of metal. This was, in form, somewhat like a shoehorn and pointed in two places with an ingenious form of ball-and-socket joint. On examining it closely I saw that there had been two other pieces attached to the central portion, which had evidently been snapped off. Where the metal showed its broken surface it was bright and crystalline in appearance, so that I judged the break was of recent date. At first I thought that the natives who had found it had cleaned it up, for the surface was bright and shiny.

"Lying there in my blankets, I questioned the messenger through my interpreter, but I was assured that it was just as it had been found some years before. The metal of which it was made was unknown to me. It looked like steel, with a lustrous surface, but it weighed no more than an equal amount of aluminum. Later tests showed that it had much greater strength than steel and that it was extremely hard; even a file would leave no mark upon it.

"From what I could gather it had been picked up in a valley lying some ten or eleven days' journey to the northwest of us, when several members of his tribe had ventured in on a hunting expedition.

"I say 'ventured in' because the whole of the area in question is looked upon by the local tribes as the abode of the dead, and it was only when starvation threatened, and hunger overcame their fears, that they dared to penetrate this forbidden valley.

"Impatiently I waited until I was well enough to travel, then we set out with the messenger as a guide. Gradually the character of the country changed until the swampy, fever infested jungle gave way to a rolling park-like country.

"Our way led steadily upwards until on the ninth day we were moving over a verdant plateau which was alive with small game. My little pocket aneroid barometer showed us that we were about four thousand five hundred feet above sea level. That evening we camped at the foot of a low range of hills and our guide assured me that on the morrow we should enter the forbidden valley.

"True to his promise, the following noon found us at the entrance to a little valley bounded by low hills, through which flowed a considerable stream. The hills on either side were gloriously green, betokening a generous supply of moisture, the park-like character of the valley being enhanced by occasional groups of a species of oak tree, and here and there patches of a flowering shrub whose scent filled the valley with a delicious odor. The bark of this bush, I learned, was used by the natives in lieu of tobacco, and it was not half bad as a substitute, I can assure you, especially after one had been many months without the comfort of 'Lady Nicotine.'

"It was with the greatest difficulty that I persuaded our guide to remain with us, and then only after I had presented him with a charm in the shape of a ring, which I had to assure him would ward off all danger, did he consent to enter the valley with us.

"Late that afternoon, we arrived near the spot where our guide had found this metal object. We made camp at once and I set out to survey the valley.

"About a quarter of a mile from the camp the floor of the valley narrowed, bounded on the one side by a steep cliff and the other by a ridge which ran out at right angles from the southern slope. This formation immediately aroused my curiosity, for I thought that there must be some outcrop of rock here, which kept the flood-waters of the stream from removing it. Besides, I was anxious to learn something of the geological formations of this district.

"Attended by my guide, I walked down the valley towards this formation. Sure enough there was an outcrop of rock on the north side, a hard limestone formation whose foot was lapped by the waters of the stream. Wading through the shallow water, we crossed over to the south bank.

"Where the waters had removed the surface soil I saw what at first I took to be a rib of rock reaching into the stream. On closer inspection I saw that this was, not rock, but metal. It was worn and scored by the waters of ages, but on scraping away the soil above the flood level I exposed clean cut edges. A rib of the metal ran back into the hillside.

With a sharp stake I probed the soft, loamy soil and was able to trace the direction of this rib up the hillside for a distance of perhaps thirty feet, where the covering became too deep for my probe to penetrate. Marking the spot where I could last feel it, I skirted the east and west sides of the mound with the hope of finding another clue, but I could see nothing.

"The tropical night shut down with its usual suddenness during my investigations, so we wended our way back to camp, where the light of a fire danced and flickered in the evening air. How I wished for a battery for my flashlight. The batteries, however, had perished long ago in the steaming jungle air, and I had to wait until morning with this discovery before me."

"I know how you felt," I interrupted. "I experienced the same feeling last night."

Hargraves smiled and continued.

"That evening I set the boys to work to construct rude digging implements from the scrub oak of the hillside. Crude they were, indeed, but they would serve my purpose in that light soil.

"Long before daylight, the camp was astir, and by the time the sun rose the morning meal was over and we were on our way to the mysterious mound. Setting the boys to work at intervals along a continuation of the line I had already traced out, the metal rib was soon located higher up the hillside, covered by some four feet of earth.

"I now saw that it might save time to have a couple of natives working directly on top of the mound, so transferring two of them, I directed them to clear away the top soil, while the others continued to trace the rib up the hillside.

"Two hours passed when a shout from the top told me they had made some discovery. When I arrived there they were clearing away the dry soil from what appeared to be a flat metal surface. Calling up the other boys we were soon at work removing the earth from the rounded top of the hillock.

"Little by little the metal surface was laid bare, showing it to be, not flat, but rounded with the exposed slope falling towards the stream. Late that afternoon we had come to the southern edge of the spherical surface. Here a smooth wall dropped away at an angle of sixty-five degrees with the vertical, as my clinometer showed. Something else was also revealed. We laid bare another metal rib which lay in a line with the first one.

"Again night cut short our work and tired out from exertions with my primitive shovel, I fell asleep directly after supper, to wake and find the eastern sky reddening under the rays of the rising sun.

"Working down the convex slope we gradually laid bare the surface until one of the boys revealed a crack in the hitherto unbroken surface. As the soil was rapidly removed we exposed a circular plate set flush in the metal. Near the periphery and diametrically opposite each other were two holes which we rapidly cleaned out, showing them to be let in the plate at an angle of perhaps thirty degrees.

"With the aid of the boys I tried to lift this cover, or whatever it might be, but it seemed to be as solid as the rest. A close scrutiny of the edge, which was a little ragged in one place, made me think it might be threaded. With this in mind I placed two stout sticks in the holes and attempted to turn it, but with no success until it occurred to me to try the opposite direction. Throwing my weight on the lever with one of the boys doing the same on the other side I essayed to turn the plate once more. Suddenly we were both sprawling on our hands and knees. The plate had turned.

"Unmindful of my bruises, I jumped to the plate, and gradually we unscrewed it, the plate, with each turn, rising higher and higher from the surface in which it was set. When it stood fully eighteen inches high we came to the end of the screw and by our combined efforts swung the heavy disc of metal aside. Subsequent measures showed it to be twenty-eight inches in diameter and twenty thick.

"We had uncovered a hole some two feet deep, at the bottom of which was another plate. Arranged in the form of a square of twelve on a side were one hundred and forty-four equally spaced circular holes, each one about half-an-inch in diameter, and on the plate lay six metal objects. I picked these up and examined them one by one.

They were similar in shape and size and were in the form of a rod of circular cross section, six inches long with a cross piece on top giving them the form of a capital letter T. Each of these were slotted across at various points, but no two in exactly the same manner, and on them were engraved strange characters. Here is a sketch of them."

Hargraves handed me a piece of paper on which was drawn the figures I reproduce here.

[Illustration] TI II Tt I

"The thought struck me at once that these things might be keys to unlock whatever lay before me, so I tried one in a hole where it fitted snugly. Now, I asked myself, into which hole did each key fit. There were one-hundred and forty-four holes and six keys, so there were evidently $144!/138!$ ⁴ ways in which these six keys could be arranged, using all of them. Out of more than eight trillion ways of doing a thing with only one of them correct, the chances are somewhat against one's hitting the right combination by chance!"

"You might hit it once in a million years," I laughed, "if you could keep on trying that long."

"Well," he continued, "I saw that there must be some solution to my problem, so I looked for a clue and found it. One of the corner holes was marked while the one diagonally opposite looked like this."

He drew these figures as he spoke.

⁴ $144! - 138!$ Factorial 144 divided by factorial 138 is $144 \times 143 \times 142 \times 141 \times 140 \times 139 = 8,020,000,000,000 + 3! = 3 \times 2 \times 1$; $4! = 4 \times 3 \times 2 \times 1$; etc.

"On the plate, above what I took to be the top of the square, were engraved twelve symbols, like this

[Illustration] •I[THEIIET

"After copying these down in my note-book, I sat down to think it over. From the occurrence of twelves, both in the number of holes and the number of symbols, it might be possible, I thought, that the duodecimal⁵ system was used by those who had made this thing. Following up this thought I saw that the symbols were, in order, zero to eleven according to our notation, hence the first of these keys was number two and the others 60, 38, 91, 42 and 108 respectively.

"Hurriedly I placed the keys in their corresponding holes and as I did so I felt the wards of the lock mechanism engage with the slots. Turning the keys as far as they would go I was now able to lift the plate with the aid of the boys, using the keys as handles.

"It was thinner than the former one, being about a foot or so thick, and as we lifted it I noticed that a number of radial bars on the underside had slid back into their sockets.

"You can imagine my feelings as I peered down and saw no other obstacle in my way. Sacrificing one of my few precious matches I leaned as far as I could over the hole. The match burned bright and clear; evidently the air inside was pure. Just below me I could see what appeared to be a platform. Taking a stout stick, long enough to reach it, I tested it carefully. It seemed quite strong and firm, so taking a chance, I lowered myself into the hole and my feet just touched as I hung from the edge with my hands.

"I could see by the light that filtered in from overhead that I was standing on a metal grating. It was not level, but tilted downwards to the north. As I had suspected, this construction, whatever it might be, had fallen over from the vertical and lay at an angle on the hillside.

"Ordering one of the natives to fetch torches, I stooped and peered around. I could dimly see that I stood on the top of a curved stairway leading down into the darkness. Grasping the heavy handrail with which it was protected I cautiously descended. I noticed that the steps were abnormally high as I went down. Later I was to know the reason. A few steps down and I came to another platform, which I could make out in the faint light as circular, surrounding a 'well.'

"Striking another match, I examined the wall behind me. In its surface I saw another set of holes similar to those in the plate we had removed. My match flickered out and, not wanting to waste any more of my precious store of them I climbed the steps and wriggled out into the daylight to await the arrival of the torches.

"Presently the boy I had sent arrived with a goodly load of dry, resinous sticks that would burn well and brightly. I lit one, and calling to him to follow me, I again lowered myself into the hole, remembering to take the keys with me. Stepping carefully for fear of falling on the sloping surface, I walked around the gallery examining the place. It was about twenty feet in diameter with a five foot gallery from which led a second flight of steps. There were four sets of key holes in the wall about five feet above the floor.

⁵ Counting by twelves instead of tens as we are accustomed to do, hence the numbers ten and eleven will have separate symbols.

"The second gallery was exactly like the first and I did not stop, but went on down the last flight of steps. This was evidently the bottom of the cylinder and, like the other two stories, its walls held the now familiar key plates.

"Going to the one on the lower side I examined it closely. Above the square of holes were twelve sets of symbols arranged in pairs, the first members of these pairs corresponding to the numbers on the keys. Evidently the keys did not correspond to the same holes as above, so, inserting them in their corresponding new numbers, I turned them as I had done before.

"Immediately, a section of the wall swung inward and there was a sudden rush of air which nearly extinguished the torch. The air pressure had been much less inside the chamber which now lay open before me, than outside, and the door was apparently airtight. No wonder I could see no sign of the joint in my first cursory examination of the walls.

"Before me, stacked around the sides, were a large number of box-shaped objects, held in place by bars reaching from floor to roof of the chamber, each box bearing a number. Removing one of the retaining bars, which fitted into sockets, I pulled down the top box of the tier.

"On the front of this box was a lever-like handle, this I turned, and as I did so there came the hissing sound of air entering a vacuum. Turning the handle further it was quite stiff—the air rushed in with a final sigh and the lid of the box raised sufficiently for me to put my fingers under it and throw it back.

"The lever had operated an eccentric which had forced the lid up against the pressure of the outside air. The lid was tongued, and fitted into a corresponding groove in the upper edge of the box, and the groove was filled with a waxy substance which had made the joint airtight. I noticed afterwards that each box had a filled hole through which the air had evidently been exhausted.

"Carefully packed in a substance that looked like fine steel wool were a number of broad oblong cases, about the size of a standard volume of the 'Encyclopedia Britannica,' the topmost of which I removed. It was of the same metallic substance that I had encountered all along, and on its edge was a little knob set in a recess. This I pressed and a cover flew back.

"It was a volume, and such a volume as the eyes of living man never saw before. There before me was the most startling illustration I had ever looked upon. Instead of the usual lifeless flat things we are used to, there lay a picture in three dimensions. The illustration depicted an animal or reptile—I don't know which it was—and it stood out there in the torch light like a live thing. I ran my fingers lightly over the surface to assure myself that it was not a model, or in relief, but it was as flat as a table top. The colors were marvelous; they had life and brightness in them which enhanced the natural look about the thing.

"At the foot of the case in which the picture lay was a tiny lever-like arrangement. I pressed this over and as I did so there was a tiny whirring sound followed by a click, and the picture flicked out of sight, and was replaced by another.

"One-half the page—if I may call them pages—was occupied by this new illustration, the other half being filled with characters, evidently writing of some kind. Page after page flicked by at my touch, the majority bearing those wonderfully executed illustrations in three dimensions.

"Box after box was opened, and each was found filled with these strange volumes. I carefully replaced those I had removed and closed the lids of the boxes, replacing them in their tiers.

"Where was I going to start in this place? I felt like a child surrounded by novel toys, not knowing which to examine first. Then it occurred to me that everything was arranged in a methodical manner—the numbering of the cages and the volumes showed this. Looking on the door of this cell I saw something I had overlooked before. It was numbered ten, according to our notation. Number one must be on the first landing.

"The air was becoming thick and suffocating with the oily smoke of the torches, but I made my way to the first cell and opened it in its turn. Being warned this time, I had the boy stand back with the torch so that it would not be blown out. The pressure here was much lower than in the other cell. I was nearly overthrown by the sudden gust of air that drove in before me as the door swung back.

"This chamber was similar to the one below, and in the topmost row of boxes I saw number one in a corner. I removed this case and, as the air was becoming unbearable, I took it out into the sunlight to examine it.

"It contained what I may liken to a child's primer, profusely illustrated. The first volume was filled with pictures of common objects, each with a few symbols at the sides. Trees, rivers, lakes and mountains; birds, beasts and reptiles, the majority of which were unknown to me, were illustrated. The second volume contained composite pictures—simple actions of human-like creatures and so on. I saw at once that it would be quite easy for a man of average intelligence to learn this unknown language with the aid of this wonderful primer. To one who was accustomed to deciphering old writings, as I was, the task would be ridiculously easy.

"The setting of the sun drove me back to camp, but not before I had replaced and locked the place, taking the keys with me.

"By the light of the fire I studied my trophies that night. It might interest you to know just how the 'lessons' were arranged. Take for example the verb 'to walk.' In one set of pictures a being was shown in the foreground, approaching a hill. The second showed him, bent forward, walking up the hill, while a third showed him at the top. The characters were exactly the same in each case, but over the first was an inverted V; over the second, nothing; and over the third a V. The tenses were all indicated by a symbol above the verb. The degrees of adjectives were similarly indicated, hence it simplified the written language exceedingly.

"I sat and studied well into the night until weariness compelled me to cease, but at dawn I was awake and at it again. Throughout the day I worked, having given instructions to the boys to continue their work of removing the earth from around the cylinder.

"Every moment the system of writing became clearer, until late in the afternoon I came to a lone sentence set out in large characters. A rough translation of it would be:

"WE GREET YOU. CONTINUE, WE HAVE MUCH IN STORE FOR YOU."

"Here was a direct message, and a message that made my heart leap. If I had worked hard up to this point, I worked feverishly now. Who, I wondered, were 'WE'?"

"The following day another message was translated. It read: 'THE PEOPLE OF ANOTHER WORLD GREET YOU.' "I checked my translation again and again, but I had made no mistake. That was the meaning of the sentence.

"As the days slipped by I came across more of these interpolated sentences, all encouraging me to go on. This personal touch made me feel as though there were some beings anxious for my advancement so that they could communicate with me.

"The days grew into weeks before I had mastered the language sufficiently for the purpose of those who wrote it. In the meantime the natives had progressed with their task but slowly, due to the poor implements with which they had to work. They worked slowly but honestly, so I did not press them, for I could see I had months of work ahead of me before I even scratched the surface of the wonderful store of knowledge that lay before me.

"We were truly in a Garden of Eden, for game and fish abounded, while edible fruits and berries served to keep down sickness, which would surely have followed a meat diet. In this way I was able to conserve our none too plentiful supply of provisions. The head boy was an excellent shot, so our ammunition was not wasted as it would have been had we depended upon my powers with a rifle. The climate was almost perfect.

"Eventually I arrived at the end of my primary course and came, at the end of the last volume, to a message which read—'First read volume one, case three. A complete catalogue of the contents of the library will also be found in this case.'

"This volume was soon secured, and without hesitation I plunged into it. It was written in a fairly simple style, and with the aid of an excellent dictionary I found in the same case, I was able to read right through. I read it in four days, hardly stopping to eat or sleep, nearly ruining my eyesight with the strain. After that I slackened up a bit and did manual work at intervals in order to get some exercise. I will outline the contents of this volume to you.

CHAPTER III

"Hundreds of thousands of years before this story opens, intelligent life had dawned upon one of our nearest neighbors in space, the planet Mars; in much the same manner as we have supposed it to do on this Earth of ours, so that at the time this narrative was written civilization had reached a very high plane. The records show that they had reached what we might call the ideal state. Every being was intelligent enough to work under what I might call a system of social democracy.

"Every member of the planet's teeming millions was an integral part of a smoothly working system in which no parasites existed, for when one, by some atavistic freak, did turn up who attempted to "throw a monkey-wrench into the machinery" he was simply exterminated.

"Throughout the ages, while this system was slowly being built up, the race had been carefully developed by intelligent selection in mating and every undesirable feature had been slowly eliminated. The result was that at the time this narrative opens every man and woman on the planet was both mentally and physically perfect.

" As time went on it became apparent that the life of the planet would be shortened by the loss of air and water vapor. The gravitation on the surface of Mars being much less than on the Earth, nearly one-half as great, the gases of its atmosphere would more readily escape. The Kinetic Theory of Gases

shows that a velocity of seven miles a second is readily obtained by the faster moving molecules of water vapor. This is the critical speed for escape from the Earth's attraction. How much more readily will the water vapor escape from a planet like Mars.

"Some scheme had to be developed then, in order to reduce this rapid escape of the planet's vital fluid, if life on the planet was to be possible in future ages.

"Martian engineers set to work, after due deliberation, to construct gigantic underground reservoirs lined with an impervious material. After nearly a thousand years' labor the work was finished and the waters of the lakes and seas were impounded in these vast underground storage basins...

"To conserve the precious liquid still further, that which was deposited as snow in the polar regions was carefully trapped as the summer sun melted it. Huge subterranean aqueducts led it back equator-wards, assisted by enormous pumping plants. These conduits were tapped at intervals by lateral lines in order to supply water to irrigate the fast drying surface, and at the time the record was written, the construction of an intricate system of conduits and pumping stations was well underway."

"Just as the late Professor Lowell hypothesized," I exclaimed, to which Hargraves added:

"And those oases, as Lowell called them, were the locations of the pumping stations, the intensely cultivated area around them causing them to show up as black dots on the planet's surface, as your observations showed.

"The prominent blue-green markings on our neighbor in space are of a heavier soil and are the old sea beds. The lighter sandy soils were abandoned, because of the large quantity of water necessary to make them fertile, save along the lines of the canals. But to continue -

"With their highly developed instruments the Martians had ascertained that their neighboring planet, the Earth, was well suited to support life. Indeed it seemed a veritable land of promise to them, with its vast oceans and verdant continents. Encouraged by the thought of the possibilities this new world held for them, researches were instituted which resulted in a machine which would travel through interplanetary space. The method of propulsion was similar to that of the "Goddard Rocket"; gases formed by the combination of certain solid chemicals, escaping through specially shaped nozzles attached to the after part of the machine propelled it in exactly the same manner as our skyrockets are shot aloft.

"Wing-shaped members supported it in the air until its velocity was high enough for it to leave the atmosphere, while a second series of nozzles in the bow of the craft retarded it when a landing had to be made.

"A company of daring pioneers left one eventful day to commence the first interplanetary navigation our solar system has known, and after months of an uneventful journey, landed safely on the Earth. An unforeseen disaster overtook this adventurous company, however. Under the greater gravitational force to which they were subjected here, their relatively frail bodies broke down. Prolapse of their inner organs caused many to die in agony within a month of their landing, so the project was abandoned and the survivors returned to their native planet.

"Undaunted by this failure they set to work to develop a race capable of withstanding the new conditions. After a lapse of nearly four hundred years a new expedition set forth. This second party was more successful than the first, and succeeded in founding a colony on the high plateau region where the

cylinder was found. Their bodies were skillfully braced by a metal framework which relieved, to some extent, the strain to which they were subjected.

"These first intelligent inhabitants of the Earth were giants compared with us. Their average height was about nine feet; their lungs, which were developed to accommodate the rarer atmosphere of Mars, were enclosed by a barrel-like chest, but their limbs were pitifully thin, though much better adapted to their new environment than those of their predecessors.

"As time went on children were born into this new world and new arrivals came across the gulf every two years when Mars was in opposition.⁶ Then came another catastrophe. As the children born here grew, it was noticed that their intelligence was inferior to that of their parents. Bodily they were smaller and sturdier, but their mentality when they reached the adult stage was only equivalent to that of a Martian child half their age.

"Immigration stopped while this new phase was anxiously watched. Everything within the Martians' power was done to check this effect, but without avail. Things went from bad to worse as the second generation was born, for these were still farther from the high mental standard of their forefathers. Instead of highly intelligent beings, the race was rapidly reverting to the primitive state.

"The fourth generation was but a grotesque caricature of the original stock, and were already forming into bands of nomadic savages, leaving the center of their community to wander at large over the face of the Earth.

"Everything within the power of the Martians having failed to alleviate these conditions, the projected plan was abandoned. Before leaving this planet forever, to return to their own sphere, it was decided to build a monument to their endeavors, so that as time went on and intelligence again returned to this planet, a record of their attempt, and data of the most useful kind, would be available to those who found it.

"Two other cylinders, similar in every respect to the one I found, were constructed of a tough noncorrosive metal which would withstand the destructive forces of the elements throughout the ages until intelligence again appeared. This period has been much longer than was anticipated by the builders, I can see from what I have read. The three monuments were placed where observation had showed cataclysms of nature, such as flood or earthquake, would be at a minimum. One where I found it, another somewhere on a continent over which the Atlantic now rolls, and the last in the continent which we know as Australia. This latter may yet be found. The cylinders were sealed in the manner I have described so that none but intelligent beings could gain access to them. They were so constructed that should they break they would do so midway between the dividing partitions of the cells, thus leaving each cell intact until someone should arrive who could solve the riddle of the system of numerals and make keys to fit the locks.

"This planet and all their works were then abandoned. Practically all other traces of their sojourn have now vanished into dust, though here and there I found remains of their supporting harness, for which they had used this remarkable metal, which is, I believe, akin to aluminum."

CHAPTER IV

⁶ Opposition. A planet is in opposition nearest to the Earth when the Sun, Earth and the planet are in the same straight line with the Earth and the planet on the same side of the Sun.

By the time my cursory survey of the contents of the library was completed, the natives had succeeded in clearing away the mass of earth around the cylinder, so that I was better able to understand its construction and what had happened to it throughout the ages.

"The walls of the object were approximately six feet thick with the top and bottom of convex form, better to withstand any great pressure to which it might be subjected. The whole structure was of one seamless piece, unbroken save where the manhole gave access to its interior. Four massive, equally spaced spokes, or ribs, radiated out from the cylinder, the object of these being to prevent the cylinder rolling over as the soil subsided. The cylinder was approximately forty feet high and sixty in diameter. The arrangement of the interior I have already described to you.

"Originally the structure had rested on the surface of a hard limestone formation, but the gradual weathering of this had caused it to sink downwards into the little valley which now exists there.

"Having completed my examination of the cylinder and satisfied myself that there was nothing more to be learned until other volumes were translated, I carefully sealed and locked the entrance, after selecting a few of what I deemed the most important records to take away with me. The keys I sewed into a canvas belt which I strapped about my waist and, packing the remaining trophies very carefully, we retraced our steps to the coast.

"Eight months after leaving the valley I was once more in Washington where I laid my discoveries before the departmental heads. It was decided to keep the thing secret until an expedition could go to Africa and return with the remainder of the library. I expect that we shall be hearing from them in a few months' time, if all goes well.

"Among the volumes I brought out with me was this one," Hargraves said, reaching for the package he had brought with him.

Unwrapping it, he handed me a lustrous metal box such as he had described. I took it and pressed the spring at the side. The cover, which I may liken to the front board of our books, flew back.

There before me, apparently floating in space, was the representation of a sphere. So real was the three-dimensional aspect of the thing that I could not resist passing my fingers over its surface to assure myself that it really was in one plane. It was an illustration of the planet of mystery-Mars. At the poles glistened twin polar caps, the northern one surrounded by a hazy outline while the southern was belted with a liquid-blue band. It was evidently the fall of the year in the planet's northern hemisphere.

I recognized some of the principal features, Utopia, the Syrtis Major and the Pseboas Lucas⁷ though there were other blue-green markings with which I was not familiar. The desert areas, I saw at once, were much smaller than they are today and only a few canals were shown.

⁷ The reader is recommended to read "The Planet Mars," "Mars and its Canals," and "Mars as the Abode of Life,"-three volumes written by the late Professor Percival Lowell, who observed Mars systematically for twenty years, mostly at Flagstaff, Arizona, where the atmospheric conditions are, perhaps, better than those to be found at any other observatory. These books are well written, mostly in non-technical language.-The Author.

I stopped to examine the "page" on which it was depicted. Like the case, it was of metal, and appeared to pass over a roller, like the film of a camera. Afterwards I learned that it was on an endless belt arrangement, passing over a series of small rollers which kept the metal sheet from coming into contact with itself. Had this precaution not been taken there was a danger of the sheets cohering and being irreparably ruined.

Pressing the little lever-like arrangement at the lower end of the case as my companion directed, the picture flicked out of sight revealing another view of the planet. A series of such views gave details of every portion of the planet's surface and then I came to a different type of picture.

It was an illustration showing a gigantic engineering undertaking. A low range of hills formed the background and down their slope ran a great scar. At the foot was a vast building under construction, and leading from it to the foreground was an immense excavation at the bottom of which were what I took to be excavating machines, whose apparent size was enhanced by the diminutive, human-like figures I could see here and there among them.

Translating the legend below, Hargraves informed me that this illustrated one of the canals under construction and that the building at the foot of the hill housed the pumping mechanism which was to raise the water to its new level. This particular piece of work was at what we call the northern point of the Trivium Charontis.⁸

Page after page flicked before me on the pressing of the lever. Great engineering works, maps and plans of districts and cities, and last of all views of the cities themselves. These latter illustrations are well worth describing. Unlike our canyon-like streets the ways received sunlight in abundance, for the buildings were pyramidal in form, each story being smaller than the one below, with a broad open space running around it. A reddish stone seemed to be used in their construction, with a trimming of dull green, well suiting the style of architecture, which had a Babylonian cast about it. Fancy carving or ornamentations were wholly absent.

A number of torpedo-shaped objects were evidently moving through the air above the ways between these massive piles, a host of others were "parked" on the broad galleries of the buildings, over which were what I supposed to be long windows which lighted their interiors.

This, Hargraves told me, was the metropolis of the planet, and these were the executive offices from which the affairs of this far-off world were directed. A symbol mounted on a staff at the top of each building marked the department to which it belonged. A flaming Sun, crossed parallel lines, a square and compass, and a cluster of fruits were among some of those I saw. I will leave it to the reader's imagination to solve the meanings of these symbols.

Another view showed the stages from which great aerial liners left for distant cities, or to which they came to discharge their living cargo. A few were resting upon their cradles, taking aboard freight and passengers, or discharging the products of distant districts into conveyors which took it rapidly underground. All heavy traffic was carried underground in the cities, I was informed, and came to the surface only at its destination.

"To think that this was taking place half-a-million years ago," I said to my companion. "I wonder what it is like there now."

⁸ Observations have shown that there are no great elevations on the surface of Mars-nothing that approaches mountainous size.

"Some day we may learn," he replied. "They may have progressed but little and may be passively waiting until our intelligence is high enough to make it worth their while to communicate with us. Think of the difference in intelligence which must exist between us! Perhaps as much as between mankind and the apes. We would not think of establishing communication with monkeys, would we? Then we must not expect to hear from our neighbors until we begin to approach their standard of intelligence."

It was late that night when my visitor left, very kindly leaving the volume behind for my further perusal and with a promise to aid me by interpreting the accompanying text. Without his aid I would not have been able to make much of it, and would perhaps have come to many erroneous conclusions.

The following days, with Hargraves' assistance, I studied it thoroughly, comparing the maps with my own drawings and checking up much of my observational data.

I have written down this story so that time would not cause me to forget the finer details. Some day I may publish it, if I can obtain permission.

Postscript-Since penning the above the remainder of the library has arrived in America, and my friend informs me that I am quite at liberty to publish this (which he has read). At present Hargraves, with a large staff of assistants, is engaged in the translation of the records, but it will be a long time before such a colossal work can be published. The expense will be enormous. The world has waited half-a-million years for this discovery, so I suppose we can be patient for a few more years until the story is given to us.