

Another World than Ours

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Another World and Cars.

I A study of space and its occupants has long interested the minds of men, and there has always been a reward of knowledge for the interested and careful observer in this, as in other lines.

The desire for knowledge of our neighboring worlds called for the invention of the telescope, and this invention, in return, gave the study of the heavens its most valuable aid and an unprecedented impetus. Since this invention an immense amount of information has been gathered on the subject - more, in fact, than can be comprehended by any one mind, in one short life time, and as yet, only a small part is known of all that there is to be known on this subject.

The subject of astronomy is too broad to be treated in this small volume: the sub-subject of the planets of our solar system is perhaps the most noticeable division of the theme, but even this is too extensive for this treatise, so we will confine ourselves to an extended view of a single planet, one, of which enough is known to make an interesting study, and not enough to make it seem like a study of the earth.

This planet is particularly interesting to us, on account of its close resemblance to our earth, in physical conditions and in habit. Its surface,

like that of the earth, is made up of land and water, and in about the same proportion. This is according to the best authorities, who consider the red parts land and the rest water, though some claim the opposite, that is, that the red areas are water and the lighter colors show land. The divisions are made into continents and islands, oceans, lakes, and rivers. Some recent observers have thought that they could see and observe the construction of canals on the surface of Mars, which they thought to be the inhabitants - if inhabitants there be - making signals to us, for, the earth, being so much larger than her neighbor, a much better view of the earth can be obtained by them, than we get of their planet.

A phenomenon which has never been explained, nor has it been proven to exist, is that the relative areas of land and water on the surface of Mars has been known to change without any known cause.

The zones of Mars correspond to those of the earth. Each zone, we suppose, is marked by its own fauna and flora, which makes a very interesting natural history, to be studied by the Marsian

naturalist. A very noticeable fact, which has been observed since the invention of the telescope, is that there are white areas around the poles which decrease in size in summer, and enlarge in winter. These are thought to be deposits of snow and ice of the Frigid Zones. This has been the accepted theory since the earliest observations of Mars. It is the logically correct theory, and no evidence has ever been cited to disprove it. Though other theories are advanced, they are disposed of, one by one, as they appear. It has been argued, that, owing to the "peculiar condition" of things on the surface of Mars, no rain or snow ever falls, but those who claim this, advance the theory that the moisture of the atmosphere answers the purpose of our rains, and if this is so, it alone accounts for the "perpetual snows" at the poles. But other, perhaps better authority, says that rains occur there just as they do here. This side of the question has a larger number of supporters than the opposing side so we will adopt that view as we can see no real reason why such should not be the case. Martian waters and Martian atmosphere are very much like those of the earth so why should not vapors rise from, and rains descend to the surface there as they do here.

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The seasons of Mars are limited by the same extremes of temperature as those of the earth. Their year is longer than our year, the orbit of Mars being exterior to the orbit of our own planet. The length of the year there is six hundred and eighty seven days. The days of the two globes are of about the same length as measured by the rotation of each planet upon its axis. A peculiarity of either that planet or this, is that owing to the relation of the two revolutions to each other, we always see the same side of the globe of Mars, so we will be compelled to treat but one side of our subject.

Mars appears brightest to us when it is on the opposite side of the sun from us. This is called the "Opposition of Mars." But though the planet appears brightest at that time, the "opposition" is not the best time to make observations upon it on account of the refraction of our atmosphere, as we have to look through many miles more of our atmosphere at these times, the angle which Mars makes with the horizon being about thirty degrees. Two years after these periods we can obtain a much more satisfactory view of the planet, the angle subtended then, being nearly sixty degrees. The oppositions occur once in fifteen years and as the last one was in 1892, the next one is due in 1907.

The distance between the two planets varies greatly the orbit of that planet being very eccentric. At its nearest point it is thirty six million miles from us and the distance is sometimes as great as sixty one million miles. The mean distance from the sun is one hundred and thirty nine million miles, forty eight million farther than the earth is from sun. We cannot comprehend these distances as they are so much greater than any geographical distances with which we are familiar; but figures tell us that an object travelling toward Mars, at the rate of forty miles per hour would travel more than a century before it would reach its destination. The diameter of the planet Mars is about four thousand miles being just about half the diameter of the earth: the volume of Mars is thirteen hundredths that of the earth, the density ninety seven hundredths, and that planet as weighed in the scales of science is thirteen hundredths the weight of our own planet. The average velocity of motion in its orbit is fifteen miles per second, the same as the velocity of the earth, and about half the rate of speed with which Mercury goes about his daily duties. Should Mars suddenly be brought to a standstill, heat enough would be generated to raise the temperature of a globe

of lead the same size as the planet, three hundred and eighty four thousand degrees of the Centigrade thermometer. If the planet should decide to visit us and travel at its customary rate of speed, it would take a little more than three Martian years to reach us; and after her arrival, should she condescend to circumnavigate our globe by following the black line of the equator, she would get back to the place she started from in about twenty three minutes. Mercury could go over the same ground four times per hour and be ten thousand miles on his fifth round, before the sands of the hourglass had measured out its sixty minutes. Considering these figures do you wonder that man knows so little and thinks so much about the wonders of our neighboring worlds? Is it not surprising that he should attempt to prove that it is not an almighty Power that makes and governs so great a universe?

V The vegetable life of Mars is something that has not been studied as extensively as some other features of the planet. It is not supposed that the difference in color between the living and the dead vegetation there would be great enough to show through so great a distance as that which separates us from our neighbor, though some think that they have noticed a difference

between them. They say that part of the year, some very large areas are brown and at another part of the year they are light. These are thought to be extensive prairies similar to what the area of Kansas was, half a century ago. This change of color may be explained in one of two or more ways, or it may not be explained at all. The difference in color ^{is} a difference only in the amount of light reflected and not a difference in color. This is in accord with the explanation of the white areas at the poles where all the light is reflected. The other explanation is that the vegetation of Mars is not necessarily green like it is on the earth. Did you ever ask yourself why some particular of our existence is just as it is, and what would be the effect if there should be a slight change of our surroundings? Could not chlorophyll be some other color than green? Or could not the life of the plant be supported in some other way than by the formation of starch under the influence of sunlight? The same power that makes existence possible at all would find it just as easy to sustain vegetable life by use of some substance with a red coloring matter as to do so with green chlorophyll. But if we can prove the physical conditions

of Mars, similar to those of the earth, we can study the green things which surround us; and make the application on our neighboring planet. (The "green things" referred to, are vegetables). But astronomers, as far back as their race has had an existence, have been trying to prove this similarity but as yet they have not entirely succeeded and the very strong probabilities are that the work will never be finished. But we will not try to predict what man may do in the future. At the beginning of the nineteenth century, any one who would have made the statement that steam could do half as much as it now does, would have been called a crank: But the locomotive now draws loads, greater than could be drawn by using all the energy stored up in all the animal bodies in existence: the express train now takes a man from one side of this continent to the other, in less time than it took him, a hundred years ago, to travel Washington D.C. to New York City: the lightning has been governed and harnessed; and it now does the bidding of man; and it is not impossible, that with the improved air navigation of a few centuries hence,

man may be able to visit some of the neighboring worlds. If it is not in opposition to the will of the governing Power of the universe, man will some time know all that he now wishes to know in regard to other worlds as well as in regard to our own. There we may know something about the planet Mars. Such a knowledge would of course be interesting but so long as the fact remains, that it would take a hundred years travel at the rate of forty miles per hour, we must not hope to know and shake hands with our neighbors on other planets. Man has not yet succeeded in lengthening out his life to that extent and until the "Elixir of Life" is discovered, or a process, something like instantaneous transportation is invented, our absolute knowledge of the other members of our solar system is necessarily limited.

Unlike the earth, Mars has two moons which have only been discovered a short time and consequently, little is known about them. Their sizes are given as anywhere from six to sixty miles. The authority which I have accepted gives the diameter of the smaller

of the ~~two~~ as eleven miles and the larger one, Phobos is given as seventeen miles.

In the absence of some more accurate knowledge of this part of the subject let us make a few comparisons of Phobos with the earth as regard to size. Suppose Phobos to be a miniature earth, exactly like our planet in all but size; now reduce our system of measurements to correspond to the reduction in size of the planet, and take an ordinarily large man, six feet tall if you please; and transport him to the surface of Phobos without the ~~proportional~~ reduction in size, and then proceed to make a few comparisons. It would take three thousand, two hundred ordinarily large Phobian men (six feet tall, if you please) to reach the top of the Earthian, so suddenly placed among them: In other words the stranger would be three thousand, two hundred times as tall as any of the natives. Measured in Phobian measurements he would be nineteen thousand, two hundred feet high, which is nearly

four miles. Under ordinary circumstances he would take a step of about two miles and a half: In cases of great haste this would be increased. The soles of his shoes would reach seventy feet above the heads of the tallest inhabitants; and the amount of ground covered by one of his feet - it would not make any particular difference - which one - would be about two acres. If his influence should be increased and the faculty of the natives for being influenced should be increased to correspond to the sizes of the two spheres, the result would be enormous. If he should use his influence in the right direction who can estimate the amount of good he might? But if he should use this influence, not for the best interests of those around him, suppose him to be a "calamity harber" if you will; and if the people are not on the verge of moral, material, and political ruin, it is not the fault of the man whose influence we are trying to measure.

The smaller of these two moons makes its revolution once every eight hours, so here we have an instance of a moon that rises more than once per day. This idea might well be adopted by our own moon but we are nearer the sun than they and we do not need so much light which is reflected by a satellite, so we will not change things.

II We now come to what is perhaps the most interesting, though an entirely unimportant part of our subject, - that of the habitation of the planet. The two sides of the question are equally well supported, or were when we commenced our study; and either view you accept, you can find plenty of others who believe as you do. No one knows any thing about it, but it is perfectly natural for one who is studying the planet, to form an opinion as to the probability of it being inhabited. Either view may be adopted. You may pay your money and take your choice. It makes no difference to us whether or not our neighboring planet is inhabited by beings like ourselves, or whether it is inhabited at all, so long as we cannot associate with them. If we ever advance to the point where we can in any way be benefited by such a knowledge, you may be sure that the means for ascertaining that knowledge will be provided. But we must not suppose that the only purpose God could have in creating a world, would be to make it a suitable habitation for man. Our own planet has been brought to such a condition but it is not probable that it was created for this purpose. Even a limited study of the infinitude of the universe of which our earth is

but our atom, causes us to exclaim, "What is man that Thou art mindful of him or the son of man that Thou visitest him?" But as man is the highest work of the Creator, it is but reasonable to suppose that he should have his existence wherever conditions allow him to exist. Those who claim that it is impossible for animal life to be supported on the surface of Mars, base their conclusion on facts which they think are not exactly the same as the conditions under which animal life is supported here. One of these points is, that the atmospheric pressure is not enough to support life. But this is by no means conclusive. Why should we require an atmospheric pressure of fifteen pounds rather than more or less than that amount? Experiments have been tried which show that man can exist where the pressure of the air is less than half the supposedly necessary fifteen pounds. Then too, this amount varies with different individuals, and under different circumstances. One who has always lived in the higher latitudes does not notice that the pressure of the air is less than it should be; and such individuals do not feel the effects of going up still higher, nearly so much as does one who has always lived near the level of the sea. No

may we not suppose that a man may by his own effort get so he can live where the pressure is but five pounds per square inch, as is the case at the surface of Mars? But if he could not, the same power that makes it possible for us to breathe under the circumstances which surround us, could make a slight change in the respiratory system to meet the changed conditions. Nothing less than an infinite power could construct a lung which can perform the respiratory function of our bodies, and this same power could just as easily design an organ to operate in an entirely different atmosphere. Many individuals belonging to the same great Kingdom to which man belongs have an apparatus by which they extract the oxygen from the waters for the use of their bodies. There are many solids which chemical analysis finds it much easier to get oxygen from than they do from the air. These substances could be taken into the body and the combination of the elements broken down, and the oxygen used by the body. Or, another possibility is, that the animal body could be entirely different from our own bodies, so that oxygen would not be necessary to support life. God made man's body out of the dust of the earth, and breathed into his nostrils

the breath of life: Could he not have made the body of anything else and likewise honored it? There is a difference between matter and mind, between body and spirit. The body may change but the spirit does not so change. Hence we emphasize the point that the conditions of animal life are not necessarily the same as we see them here, and the fact that the conditions of Mars may not be entirely similar to those of the earth, does not prove the absence of animal life there. Individually I choose to think that the planet is inhabited, and I will treat the subject so, partly because conditions there are such as would support life, and partly from the standpoint of imagination. I fear no one disproving my views on this particular part of the subject, nor do I intend to try to prove my position. But it does not seem to me that God would confine the highest work of his creation to our small part of the universe, and no evidence that I have found has seemed to me sufficient to cause any one to abandon this view of the subject should he choose to hold it. The surface of Mars is very much like the surface of the earth. The elements there act very much as they do here. Their air, winds, clouds, rain, heat, light, and electricity are very much like our own; and can we stop here? No! let us carry the comparison farther;

Here, every drop of water is a little world by itself, having its myriads animalcules: why is it not so there? Here an atmosphere very similar to that of Mars, supports various forms of animal life: why should not the same result follow the same condition there.

But the two planets or their inhabitants would not be the same. No two individuals in nature are exactly alike; You cannot find one clover leaf in all the garden of nature exactly like any other clover leaf: God never made a human being but he was vastly different from any other human being and it is not probable that he has made two worlds but they have their own individual characteristics.

For various reasons the planet Mars has received more of the attention of earth's astronomers, than any of the other heavenly bodies except the moon. The surface of our satellite which is always toward us has received a more careful study than has been given the surface of the earth itself. There are many places on the earth which the eye of man has never seen; but not so with the moon. But the subject of its habitation has been considered solved. It is admitted that the moon is not inhabited, except by one lone man whose face we are all familiar with, and the never, prattler and more interesting occupant, "the girl in

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the moon." We know what the moon was for; it is the lesser light, the gesser that rules our nights.

The attraction of gravity at the surface of Mars is thirty eight hundredths what it is at the surface of the earth. According to this as someone has estimated it, a man there to weigh one hundred and fifty pounds and being well proportioned would have to be about fourteen feet high. Then with this stronger body we would expect a stronger mind and hence better astronomical instruments so that as the earth is so much larger than Mars, they can get a much better view of us than we get of them. They can see on a large scale, what Walter Scott thought of when he spoke of a "sea of upturned faces," though perhaps the applications of the thought are not the same. Then, too, Mars is a much older planet than our own; and it is probable that the inhabitants are much more advanced in the arts and sciences; and it is natural to think that our Martian neighbors would attempt to talk to us by signals, as so many have thought. Many try to interpret the presence of canals there as some kind of signs which they are making for us, but as yet no one has succeeded in understanding the language they use.

An Italian observer thinks he has noticed the unnatural movement of certain great lights there which he believes to be signals which they expect us to answer. But as yet no one has succeeded in working up an intelligent correspondence with the inhabitants of our sister planet. The success of such an arrangement would result in undying fame to its inventor. Whatever this language be, it is to be hoped that the plan is more feasible than the idea advanced by a Russian savant, that we cut, on the plains of Siberia, a huge figure of the forty-seventh proposition of Euclid, which, he said, any fool could understand. One thing is certain; if inhabitants there be there, they and we will not be content until a method is discovered by which we can exchange our knowledge of our planet for the knowledge they have of their own house.

Conclusion.

We have found this an interesting study; but so far as absolute knowledge is concerned, we have not found it. We believe that there is no point in regard to our subject, to which all agree. No two persons see things just alike; and no two persons interpret what they do see in exactly

the same way. Many of the phenomena have had temporarily, almost a universal acceptance; but they have not held it. Other evidence has been brought up which ~~proves~~ exactly the opposite of what has been thought: as some strong thinker has left the customary lines of thought, and re-interpreted or re-applied the evidence already found. In this case we have no right to call him a crank, for we cannot prove our views or disprove his. After our study we have determined that we know nothing, - absolutely nothing, in regard to Mass. But we see no real reason why we should know anything about it. When we get to the point where such a knowledge will be of any possible use to us, the Power that creates this and other worlds will provide for us the means of finding this knowledge.

Lele Quint.

June 5, 1894