

DR. WALLACE'S VIEW OF CREATION.

As a general rule, the progress of knowledge concerning the universe has tended to render advanced representatives of mankind modest rather than arrogant in estimating their own place in creation. The comprehension of the earth as simply one of many planets revolving round the sun, when in due course, it superseded the earlier conception of an illimitable plain illuminated by lamps of varying magnificence hung in the heavens above, gave the first shock to human vanity in the Middle Ages. The mediæval church felt it seriously, and powerful theological arguments, the faggot and the rack amongst them, were directed to disprove the idea that a world governed by the successors of St. Peter could do otherwise than engage the whole attention of its Creator. But as other planets of the solar family came within closer observation, the suspicion that they also might carry through space their respective burdens of souls to be saved, forced itself on the attention of less prejudiced observers, and then the true character of the stellar universe threw the whole scheme of planetary life to which we belong into appalling insignificance. When distant suns, by the million, were recognised in their true character, the reasonable probability that they also were surrounded with life-bearing planets became too obvious to be overlooked. So by degrees the conception of worlds in infinite abundance scattered through space, assumed definite shape in the scientific mind, and was practically diffused through the intelligent world. Proof positive of such a condition of things was necessarily wanting. Certainties concerning distant stars are necessarily few in number, though they now include information which only a few generations ago no one would have conceived susceptible of transmission across interstellar spaces. On the other hand, indeed, more exact knowledge concerning the outer planets of our own family have led to a tolerably sure conviction that some of these, at all events, are not at present in a condition to bear any organised life even remotely resembling our own. That discovery merely emphasises the idea suggested by the geological history of the earth. However clearly destined to be

the scene of intelligent life at some period of its career, every planet must go through phases of preparation, during which if consciousness in any form is associated with it, this must inhabit vehicles of consciousness utterly indifferent to those of the physical plane. So, therefore, the mere fact that the planet Jupiter is but just emerging from the incandescent state and probably surrounded by an atmosphere in which all bodies known to us as liquids and volatile solids would be in the gaseous state, does not tend even to disprove the probability that at a later date Jupiter may be inhabited by an intelligent race perhaps destined to evolve on a plan commensurate with the magnitude of the world it will inhabit.

So, for some people probably, the problems connected with the other worlds of the universe have lain in the nebulous region of future conjecture, no one attempting to form any definite conception of facts beyond reach of precise observation for the moment, but not without hope that at some later date advanced resources of observation might enable mankind even to gain touch with some of the other human families which are probably contemporary with ourselves. We indulge, of course, in mere guess-work in hoping that such possibilities may be developed as time goes on, but for people living in the earlier part of the last century it would have seemed equally extravagant to expect actual knowledge concerning the physical constitution of distant stars.

But suddenly, into the midst of opinions taking generally a hopeful turn, a highly respected veteran of science has hurled an extraordinary volume professing to point out considerations which rob the whole universe at one blow of all the worlds with which it had been peopled in our fancy, and maintaining the extraordinary position that we alone,—the humanity of this earth,—are the only race of intelligent organised beings in creation, the only race not only as regards the solar system, but as regards the whole starry universe to the utmost limits of the Milky Way! If it had been possible to regard the whole of Dr. Alfred Wallace's contention embodied in his book entitled "Man's Place in the Universe" as a huge joke—a hoax played upon the imperfectly trained minds of the community at large—one could at least understand its purpose, but at Dr. Wallace's time of life it is difficult to suppose that he would take the trouble to write a bulky volume of many hundred pages merely to work off a hoax of that description. We must look upon the scheme he has devised as an aberration of genius, the destiny of which one cannot but hope, in consideration of the author's many claims upon public respect, may be oblivion at the earliest possible date.

Meanwhile the subject he deals with is one of perennial interest, and the arguments he puts forward, interesting so far as they suggest to the reader conclusions diametrically the reverse of those which Dr. Wallace reaches. What is the main framework of his argument? First of all he claims for the solar system a central place in the visible universe, but by no hypothesis can this central place be defined with minute accuracy. He assumes the diameter of the visible universe, reckoning the Milky Way as its external circumference, at something like 3,600 light-years. "Light-years," as all students of elementary astronomy will be aware, is a measure of distance adopted to save the inconvenience of counting stellar distances in miles. A mile is no more appropriate as a measurement in dealing with such distances, than an inch would be in calculating the length of a voyage to Australia round the Cape, so the light-year is the distance over which light will travel in a year, moving at its appointed rate of 186,000 miles per second. Well, then, though Sirius, for example, is about eight light-years from the sun, what difference will such a trifle make as compared with the diameter of the Milky Way? It would be just as reasonable to assign the central place to Sirius or even to Arcturus, as to claim it for our own solar system. When Dr. Wallace's ideas were first thrown forward in the shape of articles in one of the monthly reviews, critics objected that the central place could not be continuously occupied by our sun, even though that were its position at the present moment; because, travelling through space at the rate it does, it would certainly, within the period of its existence, even measuring that merely by the known period of the earth's geological history, have carried it right across the whole area of space assigned to the visible universe. Dr. Wallace thinks this objection sufficiently met by representing that its movement may not be continuously in a straight line, but round some centre which, however distantly removed in miles, may nevertheless retain it within the approximately central region where he desires to establish it permanently, but at all events, even granting the fullest value to this argument, it does not touch the objection that obviously arises in connection with the claim to as good a central position as our own for the stars just named, or even for those which constitute the four corners of Orion.

Then the value of a central position will not seem to most people so great as it seems to Dr. Wallace. The idea is that only in this central region of the visible universe can the life of a star be sufficiently stable and exempt from accidental collisions to persist long enough for the development around it of such slow processes as those

involved in the evolution of mankind on this earth. Jumbled together in what he conceives the crowded region of the Milky Way, Dr. Wallace supposes that suns are too continually in collision to favour the idea of their practical employment in the generation of life. One can hardly treat such an argument seriously, resting, as it does, upon such minute specks of knowledge concerning the conditions prevailing in the Milky Way, which are all that we have as yet to go upon. For the rest, returning to our own system, Dr. Wallace's argument is to the effect that this earth alone occupies what he calls the temperate zone of the solar system, and is, therefore, alone qualified to nourish organisms depending on the delicate combinations of carbon and hydrogen, playing so large a part in the composition of the human body. Of course the obvious reply is one familiar to astronomical thinking for many years—that atmospheric conditions so seriously modify the effect of the solar rays on any given mass within their range, that without waiting for further knowledge than chemists already possess, it would be possible for us to prescribe an atmosphere that would render Venus or Mercury cool enough even for our habitation, or which, in the other direction, would provide Mars with an envelope capable of making such good use of the feebler rays reaching that orbit, as would enable them to warm up the surface sufficiently for the most exacting invalid.

With reference to Mars, indeed, we have not merely to rely on the abstract possibilities of the situation, but if we please we may follow the American astronomer Lowell, in his conclusions respecting the evidence that Mars is actually inhabited by intelligent beings who carry on engineering works on a scale which throws our own modest achievements in that line into the shade. The Martian canals, it is true, are still subject to contradictory interpretations. Astronomers who will accept no conclusions until they are fortified by the approval of orthodox authorities, are inclined to slight Lowell's interesting observations. But at all events these go far enough to make us all feel reasonably certain that whether the canals are natural or artificial channels, the meteorological conditions of Mars are, at all events, quite compatible with the growth and development of animal life not remotely dissimilar from our own. The temperature on the surface of Mars is wavering at the poles about the freezing point, and must be compatible, in the equatorial regions, with periodic changes which are most plausibly explained by assuming them to be due to the annual development and decline of crops and foliage. Indeed, so easy is it for us to understand the possibility of life on the orderly, well-regulated surface of Mars, that we might, without serious

difficulty, construct an imaginary argument from that point of view that would justify a Martian Wallace in regarding the physical conditions of the earth as grotesquely incompatible with anything like human life.

Assuming for a moment, to make the reasoning more precise, that Lowell's conception of Martian meteorology is well founded, the Martian Wallace would be above all things impressed with the supreme necessity of a tranquil atmosphere, as alone compatible with the regularity of irrigation required to provide for the fertility of spring and the fecundity of harvest. He would argue, to begin with, that a planet to be habitable must consist, in a pre-eminent degree, of land surfaces adapted to habitation. "From what we have made out of the earth," he would say, "it is obvious that more than two-thirds of that incomprehensibly useless planet is flooded with water and perfectly unfitted to maintain life. Nor in regard to the surviving remnant of possibly habitable land is it conceivable that human life could exist in the presence of the natural conditions which must prevail there. The heavy atmosphere with which the unhappy planet is girded, and which alone, of course, prevents it from being scorched from its proximity to the sun, must render it difficult to keep up any permanent division between the heavens above and the flood beneath. Huge volumes of water are continually ascending under the influence of solar heat to the upper regions of this stormy envelope, driven hither and thither by the wild commotions we can observe as actually in progress. They must discharge their clumsy contents in uncontrollable masses of water calculated to drown any beings on the remnants of land, and utterly to destroy the regularity of seasonal vegetation, nor even if these celestial cascades were absent, would it be possible for the governing powers of an earthly humanity to design an irrigation system which would safely conduct to habitable regions a flow of moisture from the poles. The land surfaces are broken up into irregular fragments probably representing the chaotic consequences of some huge cataclysm in the past. Conceivably, the earth may once have been the seat of intelligent life, although this alone is to strain hypothesis almost too far. To suppose it inhabited in its present condition is to set at defiance all we know concerning the necessary conditions of human existence."

Dr. Wallace's argument is not one whit less presumptuous than that of our imaginary Martian critic, and it is all the more bewildering to find it coming from a man holding his convictions in other directions, because a confirmed Spiritualist should surely be amongst the last to argue that intelligence is only compatible with incarnation in physical

flesh. With varying degrees of confidence, students of nature belonging to the many schools in which her ultra-physical regions are regarded as legitimate fields of research, are satisfied that consciousness even belonging to orders higher than that which ordinary incarnate humanity represents, may be embodied in matter which our physical senses cannot at present cognise. In truth, all speculations concerning the condition of other planets in space, turn, for advanced thinkers—not on the question whether it is conceivable that intelligent beings may somehow be enabled to exist there, but on simply the question whether such planets are or are not closely similar to this with which we are ourselves concerned. It will be very interesting, for example, to know, as, some day, the later races of this earth may know, whether the inhabitants of Venus are making use of organisms bearing any likeness to those of the earthly family. To say such questions can never be answered is to misunderstand the lessons of all knowledge that has been gained in the past. We need not go far back in history to reach a period at which the idea of actually determining the chemical constitution of distant bodies in the heavens would have seemed no less extravagant than to some of us still it may seem extravagant to hope for intelligible news from brother races in other parts of the system. But in any case, even if we should find that our humanity has a monopoly of the hydrocarbon compounds, it is quite possible that sooner or later we shall develop faculties which will enable us to cognise the existence of other races whatever orders of matter they may make use of in evolving their vehicles of consciousness.