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OUR UNIQUE EARTH!

*Man's Place in the Universe.* By Alfred R. Wallace, LL.D., D.C.L., F.R.S., &c. Pp. xi+330. (London: Chapman and Hall, Ltd., 1903.) Price 12s. 6d.

A BOOK from the pen of so distinguished a man as Dr. Alfred Russel Wallace would naturally find many readers, but the present volume, dealing with a subject of such general interest, will undoubtedly be widely distributed.

This work is the outcome of an article which Dr. Wallace published some time ago, and the interest it excited spurred him on to bring together in book form in a more elaborate and detailed manner the arguments on which the subject-matter was based.

The reader, therefore, has now before him the whole of the evidence upon which the author claims certain conclusions, which have "enormous probabilities in their favour," namely, "that no other planet in the solar system than our earth is inhabited or habitable," "that the probabilities are almost as great against any other sun possessing inhabited planets," and "that the nearly central position of our sun is probably a permanent one, and has been specially favourable,

perhaps absolutely essential, to life-development on the earth."

A close perusal of the subject-matter indicates, in the first place, two prominent facts. First, the masterly way in which Dr. Wallace has marshalled the available subject-matter to enforce his lines of argument, and second, the excessively clear and concise summary of the astronomical knowledge which he has employed. This latter is contained in the first six chapters, and although the author suggests that those who are fairly acquainted with modern astronomical literature might omit reading these, the account is so excellent that the advice should not be followed.

It is not the object of this review to tell our readers whether Dr. Wallace is correct or not in the conclusions at which he has arrived, for that would not be an easy matter, but to direct attention to a work which must be treated with considerable respect.

Astronomical science has, during the last thirty years, made enormous strides, but the information that is needed when considering such a problem as is dealt with by Dr. Wallace is still very sparse, and is conspicuously absent from many books which by their titles ought to contain it.

Chapters vii. to ix. deal with the problems, Are the stars infinite in number? our relation to the Milky Way; and the uniformity of matter and its laws throughout the stellar universe. In all of these the author displays a very thorough acquaintance with the recent advances in these subjects. He concludes from such evidence that the stellar universe is limited, that the solar system is nearly in a central position of the Milky Way, this position being probably a permanent one, and, lastly, that the whole material universe is one as regards physical and chemical laws and material structure.

In the next chapter he sums up the essential characters of the living organism in a remarkably clear and definite manner, and points out the intimate connection between animal and vegetable life.

The chapter which follows describes all the physical conditions essential for this organic life, and then the four subsequent ones point out how these conditions, in his opinion, exist only on one planet, our earth, in the solar system. Not only does he suggest that the earth alone is inhabited, but that the other planets of the system have never been and never will be the seat of organic life, since they never can produce the exact conditions that are considered necessary.

The next and last chapter carries the argument into the starry realm beyond the solar system, and here the author gives his reasons for concluding that only a very few of these stars may be suns with life-supporting planets.

In considering man's place in the universe it seems that the matter dealt with in chapter x., in which the author describes the essential characters of the living organism, contains the criterion on which the whole question of the habitability of other worlds turns.

It is known that protoplasm is so complex chemically that it defies analysis, and protoplasm, to use Dr. Wallace's words, "is, as it were, only the starting

point or material out of which the infinitely varied structures of living beings are formed. The extreme mobility and changeability of the structure of these molecules enable the protoplasm to be continually modified both in constitution and form, and, by the substitution or addition of other elements, to serve special purposes."

May it not be that the very complex nature of protoplasm and its very property, the ease with which it may be modified, enable it to adapt itself to the various conditions, such as distance from central orb, size, &c., that exist on the different planets at those epochs in their life's history when the temperature conditions are within the prescribed limits?

Might not this element of living matter, working under somewhat different conditions, so affect the after products that they in their turn could weather the existing conditions, which to them would be natural and to us special?

To consider this earth as the only inhabited body in the stellar universe, a reversion to prehistoric ideas, may or may not be an advance, but it will require very strong arguments before man can be brought to consider that his isolation in the cosmos is indeed a fact.

The book, however, is one that should be read by all those interested in such a speculation, for speculation at the present time it can only be, and much valuable information may be learnt about the various subjects which the author has had to deal with in his broad survey.