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Under the Light of Recent Scientific Researches

Richard Anthony Proctor

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The English astronomer Richard A. Proctor was already a well-known populariser of science when he published *Other Worlds Than Ours* in 1870, joining a ferocious debate about the possibility of life on other planets in which Whewell (1853) and Brewster (1854) had also participated. Taking his cue from the seventeenth-century French astronomer Fontenelle's classic book *The Plurality of Worlds*, Proctor discusses Victorian discoveries about the Earth's solar system and describes what was known about each of the planets, as well as moons, meteors, comets, and stars. The guiding theme of the book is Proctor's belief in the possibility of extraterrestrial life, and several chapters are devoted to evaluating the habitability of Mars, Jupiter, Mercury, Venus and Saturn. The text includes many illustrations of the planets, a spectacular map of Mars, and theoretical views of the Milky Way. Influenced by Darwin, Proctor had a teleological view of the universe and believed that eventually the cosmos would be filled with living things.

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*The Plurality of Worlds Studied Under the
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RICHARD ANTHONY PROCTOR



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THE
PLURALITY OF WORLDS.

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‘Lo, these are parts of His ways ; but how little a portion
is heard of Him ? the thunder of His power who can
understand ?’

JOB xxvi. 14.

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J U P I T E R
as seen on Jan^y 31st 1870 9 30. P.M by J.Browning F.R.A.S.

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OTHER WORLDS THAN OURS:

THE PLURALITY OF WORLDS
STUDIED UNDER THE LIGHT OF RECENT
SCIENTIFIC RESEARCHES.

BY

RICHARD A. PROCTOR, B.A., F.R.A.S.

*Author of 'Saturn and its System,'
'Sun-Views of the Earth,' 'Half-Hours with the Telescope,'
&c.*

Not to this evanescent speck of earth
Poorly confined—the radiant tracts on high
Are our exalted range; intent to gaze
Creation through, and from that full complex
Of never-ending wonders, to conceive
Of the SOLE BEING right.

THOMSON.

LONDON:
LONGMANS, GREEN, AND CO.

1870.

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P R E F A C E.



THE GENERAL PURPOSE I have had in view in writing the present treatise will be gathered from the introductory pages ; but I wish to offer here a few remarks on certain points of detail.

It will be seen that on many of the subjects dealt with in this work, I have propounded views which differ from those usually accepted. I have not done this from any love of novelty, nor from any desire to attract attention by *bizarre* or fanciful theories. Each of the new views here presented has been the result of a careful study of the subject dealt with, and I have searched as anxiously for considerations opposed to any novel theory, as for arguments in its favour. If others should be more successful than I have been in finding reasons for rejecting any of my views, I shall be ready to abandon them without regret. I trust I am free from that weakness which forces a man to regard every theory he has once advocated as a matter to be defended at all hazards. No weakness more mischievously affects the work of the student of science.

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PREFACE.

As Faraday said, ‘Truth should be the primary object of the philosopher;’ and this can never be the case if, where he imagines he holds a theory, the theory has in truth possession of *him*.

Some among my readers will recognise in the views here presented, the growth of ideas which I have dealt with consecutively, with more or less fulness, in the pages of several quarterly, monthly, and weekly serials, and in one of our leading daily newspapers. I refer to this, because it has happened to me several times lately to be accused of plagiarism, when I have had occasion, in developing fresh ideas on a subject, to repeat statements which (unknown of course to my accusers) had proceeded from my own pen. It is not often one is accused of stealing one’s own ideas, but that is a pleasure I have more than once been enabled to enjoy of late, and I here present my compliments to those who (anonymously or otherwise) have afforded me that luxury.

Wherever it has been in accordance with the custom of any journal, however, I have always written under my own name.

Since the manuscript of this work was placed in the printers’ hands, I have obtained fresh evidence on some of the theories dealt with in the following pages.

One of the most surprising phenomena ever witnessed by the telescopist—a phenomenon I had read

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of long since, but had not thought of in connection with my subject—seems to me to afford stronger evidence than any adduced in the text, in favour of my theory that the major planets are subsidiary suns supplying heat (if not a minute proportion of light even) to their satellites. I refer to the observation made by Admiral Smyth, that on one occasion the second satellite of Jupiter, twelve minutes after entering on the disc of the planet, was seen *outside the limb*, ‘where it remained four minutes, and then suddenly vanished.’ Two other equally competent observers, Maclear and Pearson, witnessed the same phenomenon. ‘Here,’ says Webb, ‘explanation is set at defiance.’ But it is precisely where explanation seems set at defiance, that the true student of Nature is most hopeful of gaining instruction. The observation is very startling, it is true; and the explanation may be expected to be also surprising. But I think it is not far to seek. The satellite cannot have retraced its course; Jupiter cannot have shifted his place; our atmosphere cannot be in question: surely, when all these explanations are eliminated, our task is rendered easier instead of more difficult. A change of shape in Jupiter, corresponding to that which I have endeavoured to exhibit as explaining Saturn’s occasional assumption of the square-shouldered aspect, would obviously account for the phenomenon. We

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know that Schröter suspected an apparent flattening of portions of Jupiter's outline. Here we have an effective confirmation of that long-doubted observation. If we consider the matter rightly, the observation made simultaneously by Smyth, Maclear, and Pearson, makes that view all but certain, which in the text I have presented only as a highly probable hypothesis.

In preparing the Maps for my new Atlas (now nearly ready), I have detected signs of systematic aggregation among stars visible to the naked eye, which seem to me to place beyond all question the fact that Sir William Herschel adopted an erroneous hypothesis as the basis of his system of star-gauging. The fact that about one-third of the lucid stars are collected in a region having the greater Magellanic Cloud nearly in its centre, and covering less than one-sixth of the heavens, has never yet, so far as I am aware, been noticed. Supplemented by other facts detected during the work of transferring the stars of the British Association Catalogue to my Maps, the existence of this rich region around the Nubeculæ disposes at once of the hypothesis of a generally uniform distribution within the sidereal system. I shall be enabled, by Mr. Brothers' kindness, to illustrate my Lecture on the Stars at the Royal Institution on May 6, by means of photographs of the Maps which thus conclusively (at least in my opinion) establish the theory that there

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exist special and discernible laws of aggregation among the lucid stars.

I may add in this place, that it is not the case, as has been recently asserted, that my theories respecting the sidereal system have been founded on the discovery that certain nebulae are gaseous. That discovery, so far from being opposed to the theories of Sir William Herschel, afforded most striking evidence of his wonderful reasoning powers, since he had been led to express his firm conviction that many nebulae are gaseous, had confidently asserted that the Orion nebula is so, and had even anticipated the discovery of the variability of the irregular nebulae, recently effected by Le Sueur at Melbourne.

My theory respecting the sidereal system has been based on the signs of systematic aggregation among the lucid stars, and of a more intimate association of those stars with the Milky Way than could be expected were Sir William Herschel's fundamental theory correct. My first paper on the subject, in the 'Intellectual Observer' for August 1867, was entitled 'Notes on Star-Streams;' and it was only while inquiring into the nature of stellar aggregation that I was led to notice the laws of nebular distribution, and so to inquire into the relations between stars and nebulae. I take this opportunity of thanking my kind friend, the editor of the 'Intellectual Observer and Student,'

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for the exceptional liberality with which he has found a place for views professedly opposed to generally received opinions.

The theory brought forward in the chapter on Meteors and Comets is not altogether new. The general idea on which it is grounded has been dealt with by Mayer and Thomson, while the relation between the motions of discrete bodies and the formation of systems of orbs has been dealt with by Sir John Herschel, in considering his father's hypotheses respecting the nebulae. That idea, however, presented itself independently to my mind when I was writing my treatise on Saturn (at which time my acquaintance with scientific literature was very limited indeed), and is definitely stated in Note B of the Appendix to that work. The line of reasoning is wholly new, I believe, by which I have endeavoured to show that those peculiarities of the solar system which have hitherto been regarded as affording the strongest objection to the hypothesis of development, may be regarded as in reality the direct result of the processes by which the solar system has reached its present condition. In the preface to my treatise on Saturn I touched on the possibility that some such explanation of those peculiarities might be found, remarking, that in the rings of Saturn astronomers may one day recognise the

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action of the processes by which the solar system has attained its present state.

In the chapter on the Sun I have entered at some length into the subject of the solar corona, partly because that subject is full of interest in view of the approaching total solar eclipse visible in the south of Europe, and partly because I have seen with regret that an erroneous theory of the corona has been recently promulgated, which seems likely at the present conjuncture to affect mischievously the progress of research into this interesting question of solar physics. I have heard with much pleasure that the Astronomer Royal, at the last meeting of the Astronomical Society, altogether repudiated any share in starting this theory. Although I had seen his name associated with it, I had always thought it incredible that a mathematician so skilful and clear-sighted should have advanced or adopted so ill-considered a hypothesis.

I tender my best thanks to Mr. Browning, F.R.A.S., for the beautiful coloured pictures of Jupiter and Saturn, which illustrate the chapters on those planets; and to Mr. Brothers, F.R.A.S., for his careful revision of the proof sheets, and the detection of more than one error which had escaped my scrutiny.

RICHARD A. PROCTOR.

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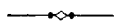
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