

now proceeding on the face of the earth. What was the law? Answer: the physiologist sees a scale in animated nature, and the embryotic progress of a high animal is represented in characters pertaining to the series below it in the scale. The geologist tells us that, to all appearance, the animals were introduced in an order similar to this scale. Over all, it is not conclusively settled that life does not, in certain circumstances, spring from inorganic elements, and that changes of species do not take place, in the present day. We thus see, not perhaps the facts of creation and development—that may be left in doubt—but as it were the shadows of those facts, impressing at least their great probability.

It may be believed that so much perverse misjudgment on these points is simply owing to intellectual obtuseness. It may be believed that men of undoubted learning and talents are unconscious of the transparent fallacy, that the disproof of nonparental generation, which only reflects on the continuance of animated nature on earth, is conclusive against a particular view of the mode of its beginning—the legitimate tendency of the said disproof being to establish an admitted absurdity, namely, that animated nature has had no beginning at all. It may be believed, even of such men, that they are simply under a mistake when they so grossly misrepresent the proposition brought forward and illustrated in this work, and draw from it vile consequences which may with equal justice be drawn from every fact or hypothesis which tends to establish a law of nature. But assuredly it requires an exaltation of charity beyond all common bounds to make these admissions in their favour.

[Since these controversial notes were written in 1853, the opposition has been in a great measure silenced. Mr. Miller survived their publication three years without making any formal acknowledgment of the errors he had fallen into; but it appears that, since his ever-to-be lamented death, his work has been withdrawn from circulation. Meanwhile a change has been going on in the views of scientific men regarding the origin of species. Natural, as opposed to miraculous creation, is now an open question. We even hear from a physiologist of reputation* of “that hypothesis to which alone the study of physiology lends any support *which is now winning at least the provisional assent of all the best thinkers of the day* that the forms or species of living beings, as we know them, have been produced by the gradual modification of pre-existing species.” This view, in the botanical department, has been now formally taken by Wallace and Hooker. In the zoological, it has been embraced by Darwin, by Huxley, and by Lyell. A revolution coming to a point so nearly the same as the hypothesis of the Vestiges could scarcely have been expected a few years ago, when Professor Sedgwick was launching his ill-considered invectives against all who dared to treat the origin of species as a scientific question.

* Professor Huxley. Macmillan's Magazine, Dec. 1859.

The publication by Mr. Darwin of a philosophical work on "the Origin of Species," strongly marks the change which has for some time been silently going on. Its reception equally marks the new temper of the public on this important subject. It is no insignificant fact that the Edinburgh Review, which fifteen years ago gave forth the Rev. Mr. Sedgwick's diatribes against creation under natural law, now proclaims itself as having "no sympathy with the sacerdotal revilers of those who would explain such law," and adding such a passage as the following: "Literal scripturalism in the time of Lactantius opposed and reviled the demonstrations of the shape of the earth; in the time of Galileo it reviled and persecuted the demonstrations of the movements of the earth; in the time of Dean Cockburn of York, it anathematised the demonstrations of the antiquity of the earth; and the eminent geologist who then personified the alleged scriptural heresy, has been hardly less emphatic than his theological assailant in his denunciations of some of the upholders of the 'becoming and succession of species by natural law,' or 'by a continuously operating creative force.'"

Mr. Darwin's hypothesis of the *becoming* of new species is founded on the modifiability of which animals are seen to be capable under breeding, and mainly consists in the suggestion that, in the struggle for existence among the multitudes of animals, any variety which was better adapted for the circumstances than its neighbours would be sure to survive while the others declined. Thus, he thinks, all existing animals may have descended from four or five primitive types. He sees an advance or improvement in their progress, but rejects the idea of any law of development.

It is to be lamented that this ingenious and most industrious naturalist should have read the present work nearly as much amiss as if, like its declared opponents, he had had an interest in misunderstanding it. He says: "The author of the Vestiges of Creation would, I presume, say that, after a certain unknown number of generations, some bird had given birth to a woodpecker and some plant to a misseltoe, and that these had been produced perfect as we now see them; but this assumption seems to me no explanation, for it leaves the case of the co-adaptations of organic beings to each other and to their physical conditions of life, untouched and unexplained." The fact being that the hypothesis of this work, besides accounting for grades of organization on a principle of development observant of time, involves "*another impulse*, connected with the vital forces, tending in the course of generations to modify organic structures in accordance with external circumstances, as food, the nature of the habitat and the meteoric agencies, these being the adaptations of the natural theologian." Mr. Darwin might, indeed, find in these pages and the companion work quoted below,* views founded on the relationships of animals and the grades of their organization, showing how natatorial genera may have been converted into others fitted for

* Explanations: a Sequel to Vestiges, &c. 1846.

the shallow, the marsh, and the inland ground; how the temptation of food or the pressure of population had probably been concerned in this spread or advance of species; how in such creatures as the hermit crab, the pique-bœuf, etc., we could only rationally see some ordinary kind of crab, some ordinary form of starling, etc., which had become adapted "in the course of generations"—*i. e.*, gradually—to certain very special conditions; all of these being views remarkably resembling his own. It seems to the author that Mr. Darwin has only been enabled by his infinitely superior knowledge to point out a principle in what may be called practical animal life, which appears capable of bringing about the modifications theoretically assumed in the earlier work. His book, in no essential respect, contradicts the present: on the contrary, while adding to its explanations of nature, it expresses substantially the same general ideas. Even in its principle of "variability," since it makes this necessarily involve advances of grade, as from the first organization to the reptile, from the reptile to the mammal, it is difficult to see in what respect it is at variance with the principle of "development," to which such advances are here referred. The difference seems to be in words, not in facts or effects. Neither—since Mr. Darwin's hypothesis places the advances and variations of organic being upon a natural basis—can it well escape the conclusion here presented, that the very first appearance of organization on the primitive mineral surface was also the result of a process in all respects natural, though not on that account otherwise than divine. 1860.]

THE END.

VESTIGES
OF THE
NATURAL HISTORY OF CREATION.

ELEVENTH EDITION.

Illustrated by numerous Engravings on Wood.



LONDON:
JOHN CHURCHILL, NEW BURLINGTON STREET.

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