

Moscow and Saint Petersburg.
Charles Darwin, LL.D., F.R.S.
Morway, 92.

Yield few of the people who wistfully struggle the heavily worn under foot, or turn aside from it with loathing, have any conception of the wonderful part it plays in the scheme of Nature, and it has been reserved for that distinguished naturalist and profound student, Dr. Darwin, to open the eyes of his fellow-men to the poor worm's real significance. Darwin has done more for science than any man living, but his astounding views and discoveries concerning the "Descent of man" and "natural selection," have undoubtedly created a pretty widespread prejudice against him among many people. The present volume should go far to remove this impression. It does not contain a word as a line calculated to shock any of our preconceived ideas, for the simple reason that the great majority of people had no preconceived ideas on the subject of worms, further than that they were creatures to be avoided—provided by providence for the express purpose of supplying bait for the angler's prey, and fulfilling no other useful destiny whatever. Such an impression—the unavoidable result of complete ignorance—the volume now before us will very much modify, if it does not completely overthrow. Here the author shows us how the worm, constantly absorbing earth and bringing it to the surface where it is cast, forms that soft rich mould which usually goes by the name of "vegetable mould," and in a comparatively short space of time throws a completely new surface over our fields and meadows to the depth of several inches. He shows how the worm, by covering up objects dropped or laid on the ground, keeps them faithfully preserved until such time as they shall be turned up by the ploughshare or the spade. He also proves that the worm is a true friend to the archaeologist, carefully preserving for him under a thick deposit of mould the ruins of bygone ages. But perhaps the most interesting chapters of the book are

those devoted to the habits, nature, and habits of the little animal. The worm, it seems, is perfectly created and almost as blind, but being merely enabled to distinguish light from darkness, and it is only through his acute sense of feeling—so strongly developed in all blind and deaf creatures—that he is enabled to perform the duties for which he was created. The poor worm has literally to find his way through the world. It may seem strange at first to read of the "intelligence" and "moral qualities" of the reptiles—so very far down in the scale of creation are they—but there is no reason to suppose that the Creator would place on earth any animal, however humble, and give it a mission to fulfil, without at the same time providing it with a certain proportion of mind. On the other hand, the author does not credit the worm with the possession of very acute feelings, and it must be some consolation to those whose consciences have pricked them for casually trampling on one of these objects, to be told that their sufferings are not really so great as their wrongs would lead one to believe. But the subject is too great for us to treat in any methodical form in the limited space of our disposal. The best we can do is to recommend our readers to procure Dr. Darwin's book, and read it carefully for themselves. None who have any admiration for the wonders of nature, and reverence for the marvellous power our Maker takes to fulfil His great designs, can rise from a perusal of this volume unimpressed with the truth that however poor, mean, and insignificant even a worm may be, he is not placed in this world without having some work to do in carrying out the Divine purpose.

Notwithstanding Dr. Darwin's advanced years and the enormous amount of labour he has gone through, his latest work is as fresh and vigorous in style as any of his writings, and well, we feel sure, find its way into every corner of the globe where thinking men and women are to be found.

—The meaning that blind and deaf men can be possessed from earth and other food, Linnæus explained:—

—But this is false; or through the angler's skill, from a sudden cause, and blind dogs, &c. &c.!!
From some such parts as in our bottom jaws
From teeth and thence a misty juice would flow;
In broken state each searching eye might see,
Some looking outward look, or land, or sea.

This doctrine, which maintains that flesh is made of molecules of elementary flesh, and bones of elementary bones, &c., may be almost; but we must remember that the above statement of the doctrine by Linnæus is that of an opponent, and that no part of the doctrine has come down to us in the words of Anaxagoras. Descartes affirmed that the senses are incapable of distinguishing the real elements of which things are composed; and, as he must have noticed that the simplest food, such as grass and corn, contains all the elements the bones, nails, horns, blood, hair, nerves, skin, hair, &c., of animals, the idea that all the above parts of animals may have existed in the grass or inevitable particles of bone, or blood, or nerves, is not more absurd than is the idea of some modern physiologists that infinitesimal drops of fluid and microscopy in eggs out of which all the diversities of organized forms are developed, contain all the elements which exist in the mature animal.

The Homœopathic or atomic doctrine of Anaxagoras was modified by Democritus. According to Anaxagoras's axiom that only "like can beget like," Democritus supposed that all things, instead of being made up of many kinds of atoms with positive qualities, were made up of an undivided mass possessing no quality but form, and that all the diversities of organized existence arose from diversities in the spatial arrange-

ment of the atoms as regards configuration, size, location, and position, from which the phenomena of life, including those of mental force, arose.

This Hylæan doctrine, that all matter here, is essentially Atomic; for Democritus said that mind and visible matter were formed of eternal, indivisible atoms. He included mind in matter, for he said there is thought but matter and empty space; and that atoms are eternal, and have spiritual and animal nature. Bayle says that Epicurus copied his system by not repeating Democritus's idea that all atoms are eternal and spiritual. The hypothesis of such atoms would answer the objection as to how matter could think. Bayle says there is no good ground to suppose animal souls as to suppose inorganic souls having the virtue of motion.—Aristotle is quoted as self-moving power in atoms, which is quite as difficult to conceive as to conceive that they possess mental force.

Plato and Aristotle supposed that all things were made out of confused and unformed matter by certain existences which pre-arranged the things formed. Plato called these existences "ideas" or "models." Aristotle called them "extended forms;" they determined the development of the new being in accordance with the particular "model" or "form." The great number of "forms" and "qualities," distinct from matter, which were supposed by Aristotle and his followers to be essential causes in determining material forms, were rejected by the great philosophers in the 17th century. These philosophers adopted the atomic Epicurean doctrine, which Aristotle had rejected, that all the diversities which happen in Nature are only the dispositions of the particles of matter by forces inherent in it.

A new law was given to the discussion of the development of life by the English naturalists, who, by means of improved magnifying glasses, discovered spontaneous life in the animal fluid which they erroneously supposed to be animalcules, as they seemed to have a round head, and

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On the Development of Life.
EVIDENCES OF EVOLUTION?

No. 2.

Mr. Kirtin.—The act by which organized beings live, and are, supposed to be generated, without a parent, by impregnated or organic juxtaposition was anciently, and is still, called Epigenesis; and the act of generation, in a general, supposed to be by the juxtaposition of cells constituted in the progress of male and female is called Epigenesis, in opposition to the term Evolution, which has been used to express the development of an organized being from a minute germ or seed derived from a pa-

rent, which germ contained within itself all the form, in miniature, which was afterwards to be developed.

We have seen that some of the ancient Greek philosophers maintained that organized beings were, primarily, spontaneously generated out of one, or other, of what they considered primary elements of matter, which beings were reproduced by ordinary generation. Anaxagoras (whom Bayle calls the author of Pantheism, or the theory that all things proceed from an infinite variety of elementary seeds,) rejected the doctrine of one primary element being the origin of all things. He believed that only "like can beget like." To explain how, and why, matter became organized into worlded beings, he suggested the existence of Homœopathic, (similitudo.) These are exceedingly minute atomic and inextinguishable particles, infinite in number and eternal in duration. He supposed that all things were fashioned out of them by a soul, or Intelligence; not a moral Intelligence—a power, not personal—a force, acting on matter but in a way mixed up with the matter acted on.

The following is a statement of Anaxagoras's doctrine, by the Roman poet Lucretius:—
—See his's examples with a curious eye
—Anaxagoras's philosophy.
The idea is common! That Nature of little bones,
Thin Flakes of Flesh, and Shreds of little Bones,
That Nature was other little Nerves for food,
—This idea is made of little drops of fluid.
That fluid from parts of the same nature rose,
That Nerves in Nuts, Pine Fire, and Air in corn,
And so in all things else what is there."

apparently coming out. Lilliesmith, however, had shown, unperceived that there were separate individuals being removed from which they were coming, and, as several specimens showed, the body of the female in the same state, he supposed that a violent contest took place between them, and that all were killed but one, who became the champion of the battle-field.

On this subject Lilliesmith based his Monogeny. "Does every" male being are his calculated models. Organized bodies, he said, are never produced from chaos or putrefaction, (Epigenesis,) but always from seed or germ, in which there is a preformation of the future being; the starting generation of animals is only an unfolding and kind of regeneration. Haller supported this doctrine of Evolution of pre-existent germs. Bonnet, in 1746, wrote to refute the various systems of Epigenesis, and put forth his theory of Emboliment, (Mosaicism,) which supposes that perfect germs are included within germs, in sufficient quantity, profused and ready for all succeeding generations. Buffon supposed that separate molecules exist in the fluid of all living creatures, which are analogous in nature with the various organs that develop them; and that when the organism is fully developed, molecules from every part of the body, eyes, nose, &c., collect in the generative organ to form new beings.

The doctrine of "pre-existence of germs" formed one of the great questions in the contest between Cuvier and Geoffroy St. Hilaire in 1830. Through Cuvier's influence, always in harmony with "the needs of theology and the party of order," the doctrine became the predominant one, until the promulgation of the cell theory, when the old objection of all life is from the egg, which was supposed to contain the pre-existent being, was abandoned, and the doctrine that all cells are from a cell, that is a miraculously created cell, which originated in a species, and which contained, potentially, cells for all the future possible individuals of the same species. Owen says, that while he agreed with Geoffroy in rejecting the doctrine of "pre-existence of germs," he retained the theory of the doctrine of "pre-existence of cells." He now abandons the cell theory, and says that upon this "neg of pre-existence" Darwin has grafted his theory of Pangenesis.

I will consider Darwin's theory in my next.

Yours, &c.

Edwards.