

THE EVOLUTION OF EVOLUTION.

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MR. EDWARD CLODD'S history of the great generalisation now called Evolution, which has recently appeared, is not only a substantial work in itself, and the most comprehensive yet written on its subject, but it possesses the excellent quality of suggestiveness. He has necessarily drawn lines of delimitation on his frontiers, and adhered pretty closely to the scientific lineage of evolution, but the volume convinces me that many of the most important facts lie beyond those frontiers. Lucretius is generally credited with being the first evolutionary philosopher, though tendencies of the like kind are to be found in Democritus, Empedocles, Aristotle, and Epicurus; and it is evident from many thoughts of Marcus Aurelius that this had become a mental attitude of moral and meditative writers. He speaks of their being only "one substance"; out of "the universal substance, as if it were wax, the universal nature moulds" all organised forms; "all things are implicated with one another;" "one thing comes in order after another, and this is by virtue of the active movement and mutual conspiracy and the unity of the substance." But ideas of this kind, when thus assumed without argument, are themselves the result of long processes of evolution, and I believe that if careful search were made it would be found that among all great races of antiquity there existed an evolutionary conception of nature, and that this underlay the quasi-mythological and symbolical belief in transmigration, avatars (from the tortoise to primitive man) the succession of the Buddhas, and (in Genesis) the development, under a maternal brooding of the life-spirit, from chaos to man. In *The Gospel of Buddha* (Carus, XCIX.) the Buddhist doctrine that "reason came forth in the struggle for life," corresponds with the teaching of the Zoroastrian Avesta of the interaction of the living

and not-living by which visible nature was fashioned. Genesis begins "In a beginning," and I doubt if there be any ancient cosmology wherein the universe is declared to be created out of nothing. The relationship between man and the animals underlies all moralising fables, from Pilpay, the Buddhagoshā parables, and Æsop, to "Uncle Remus,"—some of whose stories are traceable to aboriginal Africa. Some eminent scholars think that among the three thousand parables of Solomon were fables about "beasts, birds, creeping things, fishes" (I. Kings, iv, 32, 33).

The striking fact about these ancient intimations of evolution is that they are generally perceptions of the religious or of the moral sentiment. And when we come to the speculative theories of later philosophers and scientists the same religious association of the germinating principle is noticeable. I will mention two that I have observed and which I have not seen mentioned in this connexion in any published work,—both from the seventeenth century. Spinoza, in his work *De Deo et Homine*, argues against the existence of a Devil that "from the perfection of a thing proceeds its power of continuance." The existence of a Devil would be the survival of a being through its unfitness. Newton, after he had published his *Principia* (1687), appears to have felt increasingly a divine presence in nature while doubting that the deity was not at work in organic nature in a dynamic way. Twenty years after the original publication he added, in a note: "Perhaps the whole "frame of nature may be nothing but various contextures of some "certain ethereal spirits or vapors, condensed, as it were, by precipitation . . . and after condensation wrought into various forms "at first by the immediate hand of the creator, and ever after by "the power of nature."

Goethe in Germany, Geoffroy Saint Hilaire in France, and Erasmus Darwin (grandfather of Charles) in England, all three came simultaneously (1794–95) to the conclusion that species were physically connected, but before either of them John Hunter had placed a little footnote in one of his publications which recognised the connexion between embryonic development and the geological progression of forms. And there it lay unnoted by any eye until Ralph Waldo Emerson saw a new religion in it. And here I may relate an adventure of my own. Soon after Emerson's death I was requested to give a lecture on his life and works at the Royal Institution, London, and in preparing the lecture (which was given February 9, 1883) I was desirous of making some statement concerning an early reference by him to Hunter as having announced

a theory of "progressive and arrested development." I consulted Huxley, Tyndall, and Sir William Flower (then Hunterian lecturer) as to the statement of Hunter, but neither could tell me where the passage might be found. They had never supposed that Hunter had any such idea. But by reading steadily through the first volume of Hunter (Palmer's edition) I found on page 265 this footnote: "If we were capable of following the progress of increase of number of parts of the most perfect animal, as they formed in succession, from the very first to its state of full perfection, we should probably be able to compare it to some of the incomplete animals themselves of every order of animals in the creation, being at no stage different from some of those inferior orders; or, in other words, if we were to take a series of animals, from the more imperfect to the perfect, we should probably find an imperfect animal corresponding with some stage of the most perfect." The fact that each animal in the course of its embryonic development passes through stages comparable to those of adult animals of lower organisation is now explained by evolution. John Hunter died in 1793; his great anatomical collection is the basis of the Hunterian Museum, where now the visitor begins with the lowest animal forms on the floor and ascends by galleries which represent the strata of the earth, as to their ascending forms, up to the skeletons of all races; yet his little footnote, recognising the organic world in an egg, lay as the merest dry bone for a hundred years until the religious breath of Emerson gave it meaning. It had been impressed on me in my youth by my beloved teacher himself. I had undertaken to write a little essay on "The Natural History of the Devil," and was finding it rather difficult to deal with the problem of moral evil. But I happened to mention my task and its difficulties to Emerson, who said: "What is moral evil but arrested development?" Thus it was that many years later I was able to quote to the scientific men at the Royal Institution the footnote of John Hunter and Emerson's interpretation of it, which he had written many years before Darwin's *Origin of Species* was published.

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Evolution was Emerson's religion for a quarter of a century before its specific physical method was discovered and announced by Darwin. His son, Edward Emerson, showed me in manuscript his father's very first public lecture after he had abandoned the ministerial profession and entered on his real ministry. The lec-

ture was given in Boston in the winter of 1833-34, and entitled "The Relation of Man to the Globe." In this manuscript there is a significant blank. After tracing the progression of forms through "a thousand thousand ages" preceding man, he says: "Man was "not made sooner because his house was not ready had "wrought such changes on the surface of the globe as to make the "earth habitable for a finer and more complex creation." Who had wrought? What "had wrought"? Apparently no word or name had yet been born into the new thinker's mind adequate to fit the new fact. The blank space remains unfilled. One of his striking sentences is: "The brother of man's hand is even now cleaving the "Arctic Sea in the fin of the whale, and innumerable ages since "was pawing the marsh in the flipper of the saurus."

In 1836, the year in which Charles Darwin left college for the voyage which discovered a new world, Emerson published his first book, *Nature*, which always impresses me as the Vedas of the new scientific age, in which instead of man's ancient worship of dawn, sun, cloud, star, these glorious objects unite in the adoration of man. His anthem of unity swelled on, and evolution was his key to every mystery. Among the Emersonian students at Harvard College, of which I was one, evolution was an enthusiastic religious faith and vision in the fifties, and when in 1859 Darwin's great book appeared it seemed to us, in our various regions, as if the very dove of wisdom had alighted on the head of our dear master, who had so long seen this truth by inner vision. In that year I was present at a conversation between Emerson and Agassiz,—in whom, great as he was, the paternal Swiss pastor survived, and who, when the new star appeared, was, like the ancient shepherds, "sore afraid." He regarded this theory of Darwin's as atheistic. Emerson, who loved Agassiz, was greatly disappointed at his rejection of the discovery, and recalled to his mind his (Agassiz's) early lectures, which had made so much of Goethe's *Metamorphoses of plants*, and Oken's ideas, and the generalisation of Buffon, who said: "There is but one animal." Agassiz answered, "Yes, I have always believed in the ideal progression of forms, the gradation from lowest to highest, but to this materialistic development of one into another I cannot agree." Emerson was going on to maintain that the material and the ideal were essentially one, but Agassiz became excited and troubled, and said, "There we must differ." Thereon, with his usual tact, Emerson changed the subject. As the two men sat there, the greatest men in America, parting on the subject nearest to both,—one seeing

atheism where the other saw a new gospel,—I, who listened silently, beheld a marvellous illustration of “progressive and arrested development.” But I cannot help recognising at this distance of time that the hereditary theistic instinct of Agassiz told true, in one sense, and the particular idea of deity in which he had been educated has not survived in the post-Darwinian world. A new religious statement has become necessary to adjust evolution to the spiritual consciousness, and that statement will also have to be evolved.