

LITERATURE

HARVEY'S DISCOVERY OF MAN*

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DARWIN'S DESCENT OF MAN*

It requires but a brief study of the progress of science during the past few years to see in what way the contest between those who accept and those who reject the doctrine of evolution must inevitably end. It is true we see ranged against the doctrine of evolution many eminent men, many men who are deservedly esteemed for the industry and skill with which they have advanced the progress of science. But these men are veterans; they are those of whom Darwin speaks as the honoured but older chiefs in science. If we could judge of the science of the future we must look to the younger and rising men of science—to those who are entering, if they have not already entered, into possession of the scientific arena. An Owen in natural history or a Sir John Herschel in astronomy may regard with little favour the theories of development which are steadily making their way to an established position; but science is progressive, and it is not what is thought by the veterans, but what is inculcated by their successors, which will determine the future of science. Judged in this way there can be no question that the general doctrine of evolution or development will prevail before long, for on its side we see ranged all the ablest professors, whether of astronomy, or of natural history, or of physical science.

But so recently, only, has this been the case, that when Darwin published his great work on the *Origin of Species* he felt it necessary to exercise considerable caution in bringing before the world the views he had for many years entertained on that portion of the doctrine of evolution in which all men are likely to take the greatest interest. He nowhere stated in that work, though he left it to be clearly inferred, that he believed man to be descended from some lower form of animal. "It seemed to me sufficient," he now writes "to indicate in the first edition of the *Origin of Species* that by this work 'light would be thrown on the origin of man and his history,' and this implies that man must be included with other organic beings in any general conclusion respecting his manner of appearance on this earth." Now, however, the position of the theory of natural selection is completely changed. As Professor Huxley stated at the Royal Institution last year the theory is accepted so generally that its most earnest advocates have reason to desire for it a little healthy opposition. Accordingly Mr. Darwin has felt free to bring before the world the evidence—or, at least, an abstract of the evidence—which he has accumulated respecting the origin or descent of man from pre-existing forms by the gradual operation of the principle of natural selection. He leaves to others the consideration of certain important branches of the general subject; as the differences between the several races of man; the high antiquity of man; and the consideration of the amount of difference actually existing between man and his nearest kindred in the animal kingdom. "The work," he remarks, "contains hardly any original facts in regard to man; but as the conclusions at which I arrived after drawing up a rough draft, appeared to me interesting, I thought that they might interest others. It has often and confidently been asserted that man's origin can never be known; but ignorance more frequently begets confidence than does knowledge; it is those who know little" (the italics are ours) "and not those who know who so positively assert that this or that problem will never be solved by science."

The great problem is discussed by Mr. Darwin in the effective manner with which the readers of his works are familiar. The evidence on the general question is so presented, as to be, to all interests and purposes, irrefragable. The relationship of man to the other vertebrates is exhibited in so many ways as to leave us no choice between the two alternatives, that either the relationship is real, or that the bones and muscles of man's body, the diseases to which he is subject, his condition during the interval sleeping between his conception and his birth—say, the very parasites which infest him—that all these analogies have been created for no other purpose but to mislead the naturalist. The opponents of the general theory that man is related to other animals are left no choice but to adopt a line of argument resembling that by which of old mistaken but well-meaning men endeavoured to prevent the progress of palæontology, when they urged that fossils had been placed in the earth to delude the over-inquisitive by a simulated resemblance to the remains of animals and vegetables. Some of the special arguments employed in this portion of Mr. Darwin's work are worthy of special notice. Such, for instance, is the argument which he founds on the blunt point sometimes seen in the folded margin (or helix) of the ear, a peculiarity giving evidence that man is descended from creatures having pointed ears. These projections were first shown to him by Mr. Woolser, the celebrated sculptor. "They are variable in size and somewhat in position, standing either a little higher or lower; and they sometimes occur on one ear and not on the other. The meaning of these projections," adds Darwin, "is not, I think, doubtful; but it may be thought that they offer too trifling a character to be worth notice. This thought is, however, slight, as it is natural. Every character, as before I have said, must be the result of some definite cause; and if it occurs in many individuals deserves consideration." And he proceeds to show that we may safely conclude that the peculiarity is a vestige of formerly-pointed ears. Of like nature is the evidence afforded by a peculiarity sometimes seen in the human (or upper arm bone). In monkeys and some other mammals there is a passage near the lower end of the humerus, through which the great nerve of the fore-limb passes. In man a trace only of this passage can commonly be recognised, but "it is sometimes fairly well developed, being formed by a depending hook-like process of bone, completed by a band of ligament. When present the great nerve invariably passes through it, and this clearly indicates" that it is the rudiment of the corresponding passage in the upper arm of the lower animals. It will be understood, of course, that it is not an individual instance of this sort, but on the multiplication of such instances, that Mr. Darwin establishes his argument.

He then passes on to the gross difficulties suggested by the mental powers of man, showing, and in what sense, and to what degree, the lower animals are actuated by curiosity, imitation, attention, memory, imagination, and even reason. In dealing with the yet graver difficulties connected with the origin of the moral sense he goes far to demonstrate the proposition that "any animal whatsoever, endowed with well-marked social instincts, could inevitably acquire a moral sense or conscience as soon as its intellectual powers had become well developed, or nearly as well developed, as in man." He remarks that "the moral sense perhaps affords the best and highest distinction between man and the lower animals; but in the social instincts—the prime principle of man, moral constitution—with the aid of active intellectual powers and of effects of habit, naturally lead to the golden rule, 'As ye would that men should do to you, do likewise to them' and this lies at the foundation of morality."

Passing over the difficult problems suggested by man's mental power and moral sense, we find our author next treating of the manner of the development of man from some lower form. Here, at present at least, we must not expect to find special evidence as to every step in the long process of change. But if general evidence is founded on the same considerations which we have to deal with in the case of the lower animals. It can be shown that man now varies; that his bodily structure and mental powers are modified by changed conditions; that in man, as with the lower animals, there occur reversions, correlated variations, and instances of arrested development. One class of reversions is worthy of special notice. We refer to the canine teeth of men. "The canine tooth no longer serves man as a special weapon or tearing his enemies or prey; it may therefore, so far as its proper function is concerned, be considered as rudimentary. But in every large collection of human skulls some may be found, as Huxley observes, with the canine teeth projecting considerably beyond the others in the same manner, but in a less degree, as in the anthropomorphic apes. In some cases, open spaces between the teeth in the jaw are left for the reception of the canines belonging to the opposite jaw. An interspace of this kind in a Kaffir skull, figured by Wagner, is strikingly wide. Considering how few ancient skulls have been examined in proportion with recent skulls, it is an interesting fact that in at least three cases the

canines project largely; and in the Nautette jaw they are spoken of as "curious." Darwin presently remarks that "he who rejects with scorn the belief that the shape of his own canines, and their occasional great development in other men are due to our early progenitors having been provided with these formidable weapons, will probably reveal by sneering the line of his descent. For though he no longer intends, nor has the power to use these teeth as weapons, he will unconsciously retract his 'startling muscles' (thus named by Sir C. Bell) so as to expose them ready for action like a dog prepared to fight." Since the variations of man obey those laws which rule the variations of the lower animals, and since moreover man multiplies much more rapidly than his means of subsistence increase, natural selection must have acted upon him, though its action would doubtless be checked so soon as his intellectual powers had become well developed, and thenceforth his mental powers rather than his bodily structure would undergo variation. The subject of the manner of man's development is continued in a chapter dealing with the intellectual and moral faculties of man during primeval and civilized times. Mr. Darwin here derives a strong argument from evidence which had been adduced—though for another purpose—by Dr. Stark, the Registrar-General for Scotland. Dr. Stark had endeavoured to show from the death-rates in Scotland during the years 1803 and 1804, that bachelorhood is injurious to life, marriage and the more regular habits attending that state conducing to longevity. Mr. Darwin, however, interprets the lower death-rate of married men differently, agreeing with Dr. Parr in ascribing the result to the influence of a principle of selection, by which, on the average, weaker or inferior men enter the marriage state less freely than men of a superior type.

In the two chapters which conclude the portion of the work specially relating to the descent of man, Mr. Darwin discusses the affinities between man and the several lower orders of animals, and exhibits his views as to the probable ancestry of the human race. In the first place we are to look for no true portraits of our actual ancestors in any living creatures. The same processes which have been at work in modifying man have operated, though in other directions, in modifying his co-descendants from some common ancestor. But for our nearest relatives among existing animals we are to turn to the Catarrhine or Old World monkeys. The Pliorhine monkeys of the New World (as their name implies) have nostrils formed rather on an exaggeration of the Socratic model than on that which is deemed proper for men. Their dentition also is different. In the Catarrhine monkeys—the gorilla, the chimpanzee, and the orang-outang—we see our nearest relatives; and as Africa was formerly inhabited by extinct apes, closely allied to the gorilla and chimpanzee, "it is somewhat more probable that our earliest progenitors lived on the African Continent than elsewhere." Judging of the nature of these progenitors from the evidence supplied by the natural history of man, Mr. Darwin infers that "man is descended from a hairy quadruped, furnished with a tail and pointed ears, probably arboreal in its habits." "This creature, if its whole structure had been examined by a naturalist, would have been classed amongst the quadrumanous, as surely as would the still more ancient common progenitor" (we have permitted ourselves here a slight modification of the text) "of the Old and New World Monkeys." Then the ancestry is traced higher and higher (or, as regards the type, lower and lower), through the higher mammals to an ancient marsupial animal, and so through a long line of diversified forms, until we reach "some reptile-like or some amphibian-like creature." This creature is the descendant of some fish-like animal. And finally (at least for the present) we are taught to recognise the early progenitor of all the vertebrate animals in some aquatic animal provided with gills, hermaphrodite, and with the testis, heart, and other important organs imperfectly developed. The animals which of all others now existing seem closest of all to this our common ancestor, are the larvae of certain creatures called Ascidians, which "hardly appear like animals, but consist simply of a tough leathery sack with two small projecting orifices." The larva, however, which more immediately concern us, "somewhat resemble tadpoles in shape, and have the power of swimming freely about." And Mr. Darwin traces in the requirements of some ancestral animal "allied to the existing tidal Ascidians," the explanation of "the mysterious fact that with the higher and now terrestrial vertebrates, not to mention other classes, many normal and abnormal vital processes run their course according to lunar periods. A recurrent period, if approximately of the right duration, when once gained, would not, as far as we can judge, be liable to be changed; consequently it might be thus transmitted during almost any number of generations. This conclusion, if it could be proved sound, would be curious; for we should then see that the period of gestation in each mammal, and the hatching of each bird's eggs, and many other vital processes, still betrayed the primordial birthplace of these animals."

We have purposely left untouched the portion of Mr. Darwin's work which many naturalists will regard with chief interest, that, namely (and it is the largest section of the work), in which he deals with the principle of sexual selection. It is full of the most interesting facts, and is, indeed, more especially Darwinian (if we may be permitted the expression) than the portion dealing with the descent of man. We must admit, however, that as respects the special purpose for which Mr. Darwin has elaborated this portion of his work—the explanation of the differences which distinguish the various races of man, we think the views of Wallace on the whole more tenable. In applying the principle of sexual selection to man Mr. Darwin succeeds rather in proving that a type once formed would either remain unchanged or become more varied, than in showing how the several types could have been formed after man's intellectual faculties were developed. Mr. Wallace, by his theory that the different races of man have descended from types formed before the race entitled to be called man had appeared, seems to us to be a more natural and satisfactory manner the difficulties—suggested by the marked differences distinguishing the various races of man from each other.

"The main conclusion arrived at in this work, namely, that man is descended from some lowly organised form, will, I think," says Darwin, "be highly distasteful to many persons. But he who has seen a savage in his native land will not feel much shame if forced to acknowledge that the blood of some more humble creature flows in his veins." Besides the fact of man having risen to the very summit of the organic scale, "instead of having been aboriginally placed there, may give him hopes for a still higher destiny in the distant future." We are not, however, here "concerned with hopes or fears, but only with the truth as far as our reason allows us to discover it." It will not be questioned by those who fairly study Mr. Darwin's last great work that it constitutes an important advance towards the recognition of the true answer to those perplexing questions which are suggested by man's present position among his fellow creatures.

SCIENCE AND ART.

The extensive Castellani Collection, which is expected to arrive shortly in England, and is understood to have been purchased by the Government, is in great part, though by no means exclusively, the fruit of the excavations systematically carried on in Southern Italy and Sicily, under the superintendence of Signor Alessandro Castellani.

The Court of Chancery has appointed Messrs. Newman and Kenyon, who have been for more than thirty years connected with the firm, first of Colburn and subsequently with that of Harst and Blackett, to carry on the business of that establishment in the interest of the family of the late Mr. Blackett.

According to the *Observer*, Miss Nelson is not expected in London this season.

The *Athenæum* announces a work by Mr. J. Murray Graham, entitled an *Historical View of Literature and Art in Great Britain, from the Accession of the House of Hanover to the Birth of Queen Victoria*.

A German translation of the *War Correspondence of the Daily News* has been brought out in Berlin.

Captain Hall is in Washington, making final arrangements for another Arctic expedition.

A version of "Emerald," by Mr. Andrew Halliday, in which Miss Fortado will play the heroine, is in preparation at the Adelphi.

The *Observer* says that Drury Lane will not open this season for Italian Opera. Mr. Mapleson's company are expected at Her Majesty's Theatre.

M. Offenbach, driven from France by the stigma of his extradition, although a naturalised French subject, will settle for the present in London.

At the instance of a deputation of the London School Board, Mr. Forster has promised to consider the propriety of deferring the period at which Articles 31 and 32 of the revised Code are to come into operation, but he could not hold out any hope of a special grant for teaching music, though the Government wished it should form part of education.

* The *Descent of Man, and Selection in Relation to Sex*, by CHAR. DARWIN, M.A., F.R.S., &c. Two vols. (London: John Murray, 1871.)