

THE DESCENT OF MAN AND SELECTION IN RELATION TO SEX. By Charles Darwin, M.A., F.R.S., &c. London: John Murray.

Of late years, a sect of philosophers has arisen who maintain the doctrine of the evolution of the animals which at present inhabit the earth, from that of a simpler form, which, in their turn, are the offspring of forms still more simple. In this way the origin of man himself is carried back to ancestors of a type so low as to have neither brain nor heart distinctly developed. The object of the work before us is to point out the grounds on which this hypothesis rests, and to strengthen the proofs which have already been laid before the public, by additional evidence, founded principally on the results of sexual selection.

The animals most nearly approaching man in organisation are the apes; and, accordingly, if the doctrine of which we have spoken be founded on fact, it is from the apes that man derives his immediate descent. And here is the portrait which Mr Darwin draws of his ancestors—

"The early progenitors of man were no doubt once covered with hair, both sexes having beards; their ears were pointed and capable of movement; and their bodies were provided with a tail, having the proper muscles. Their limbs and bodies were also acted on by many muscles which now only occasionally reappear, but are normally present in the quadrumanous. The great artery and nerve of the humerus ran through a supra-condyloid foramen. At this or some earlier period, the intestine gave forth a much larger diverticulum or caecum than that now existing. The foot, judging from the condition of the great toe in the fetus, was then prehensile; and our progenitors, no doubt, were arboreal in their habits, frequenting some warm, forest-clad land. The males were provided with great canine teeth, which served them as formidable weapons."

The three main arguments on which the doctrine of evolution is founded are the bodily structure of man, his embryonic development, and the appearance in his body of the rudiments of organs which, in his advanced condition, are no longer developed, from being no longer required. First, then, as regards bodily structure, there cannot be the smallest doubt that man is constructed on the same general model with other animals. All the bones in his skeleton, all his muscles, nerves, blood-vessels, and internal organs may be compared with corresponding structures in monkeys, dogs, bats, or seals. There is likewise a close similarity in the composition of the tissues and blood of man and the lower animals; and various contagious diseases—such as hydrophobia, variola, and glanders—may be received by him from them, or be communicated to them from him. Further—

"Monkeys are liable to many of the same non-contagious diseases as we are. Thus Rengger, who carefully observed for a long time the *Cebus Aturei* in its native land, found it liable to catarrh, with the usual symptoms, and which when often recurrent led to consumption. These monkeys suffered also from spoplexy, inflammation of the bowels, and catarrh of the eye. The younger ones when shedding their milk-teeth often died from fever. Medicines produced the same effect on them as on us. Many kinds of monkeys have a strong taste for tea, coffee, and spirituous liquors; they will also, as I have myself seen, smoke tobacco with pleasure. Dureau asserts that the natives of north-eastern Africa catch the wild baboons by exposing vessels with strong beer, by which they are made drunk. He has seen some of these animals, which he kept in confinement, in this state; and he gives a laughable account of their behaviour and strange grimaces. On the following morning they were very cross and dismal; they held their aching heads with both hands, and wore a most pitiable expression; when beer or wine was offered them, they turned away with disgust, but relished the juice of lemons. An American monkey, an *Ateles*, after getting drunk on brandy, would never touch it again, and thus was wiser than many men. These trifling facts prove how similar the nerves of the whole be in monkeys and man, and how similarly their most nervous system is affected."

These details indicate not only structural but likewise mental affinity; and, indeed, there can be no doubt that many of the lower animals—such as dogs, elephants, and apes—possess considerable intellectual as well as moral endowments. The following anecdotes afford further proof of this assertion—

"He is encountered in Abyssinia a great troop of baboons which were crossing a valley; some had already ascended the opposite mountain, and some were still in the valley; the latter were attacked by the dogs, but the old males immediately hurried down from the rocks, and with roars wildly opened roared so fearfully, that the dogs precipitately retreated. They were again encouraged by the attack; but by this time all the baboons had re-ascended the heights, excepting a young one, about six months old, who, loudly calling for aid, climbed on a block of rock and was surrounded. Now one of the largest males, a true hero, came down again from the mountain, slowly went to the young one, crossed him, and triumphantly led him away—the dogs barked too much astonished to make an attack. I cannot do but give another scene which was witnessed by this same naturalist; an eagle seized a young *Cercopithecus*, which, by flinging to a branch, was not at once carried off; it cried loudly for assistance, upon which the other members of the troop, with much uproar, rushed to the rescue, surrounded the eagle, and pulled out so many feathers, that he no longer thought of his prey, but only how to escape. This eagle, as Dureau remarks, assuredly would never again attack a monkey in a troop."

The second argument is that of embryonic development—

"Man is developed from an ovule, about the 125th of an inch in diameter, which differs in no respect from that of other animals. The embryo itself at a very early period can hardly be distinguished from that of other members of the vertebrate kingdom. At this period, the arterial system is arch-like branches, as if to carry the blood to branchia which are not present in the higher vertebrates, though the slits on the sides of the neck still remain, marking their former position. At a somewhat later period, when the extremities are developed, 'the feet of birds and mammals,' as the illustration, Von Baer remarks, 'the wings and feet of birds, no less than the hands and feet of man, all arise from the same fundamental form.' 'It is,' says Prof. Huxley, 'quite in the later stages of development that the young human being presents marked differences from the young ape, while the latter departs as much from the dog in its developments as the man does. Starting as this last assertion may appear to be, it is demonstrably true.'"

Thus it appears that the mode of origin and the early stages of the development of man are identical with those of the animals immediately below him in the scale; and, in the words of Professor Huxley, "He is in these respects far nearer to apes than the apes are to the dog."

The third argument—that of rudiments—although not intrinsically more important than the two former, is treated by Mr Darwin with more fulness. In the human body, rudiments of muscles or of other organs habitually or occasionally appear, no longer fulfilling any useful purpose, but representing structures which are found performing important functions in the lower animals. Such structures are the muscles with which horses move or twitch their skin, the hairy or woolly covering of quadrupeds, the muscles which move the ear in many animals, the appendix vermiformis of the caecum, certain holes in the bones for the passage of nerves and bloodvessels, and, though last not least, the tail. From a consideration of such facts, Mr Darwin thinks—

"We can understand how it has come to pass that man and all other vertebrate animals have been constructed on the same general model, why they pass through the same early stages of development, and why they retain certain rudiments in common. Consequently, we ought frankly to admit their affinity of descent; to take any other view, is to admit that our own structure and that of all the animals around us is a mere chance laid to entrap our judgment. This conclusion is greatly strengthened, if we look to the members of the whole animal series, and consider the evidence derived from their affinities or classification, their geographical distribution and geological succession. It is only our natural prejudice, and that arrogance which made our forefathers declare that they were descended from demi-gods, which leads us to demur to this conclusion. But the time will before long come, when it will be thought wonderful that naturalists, who were well acquainted with the comparative structure and development of man and other mammals, should have believed that each was the work of a separate act of creation."

But is it so clear that, because the plan of creation has undoubtedly been carried out on the same model, man must therefore be a development from a lower form? In architecture we find ornamental pepper-box turrets, representing towers originally intended for defence; and we have blind windows, false doors, and dummy chimneys intentionally produced for symmetry or harmony. Is it not possible, then, that the same idea may have pervaded the creation of animals, without its being a necessity that all animals must necessarily be a gradual development from some remote original? It is, no doubt, easy to point out variations in structure and appearance which have taken place in animals, and even in man, under certain influences; but can we show any such fundamental changes as would transform one animal into another? Further, is it clearly proved that progress in man is necessarily dependent on progressive structural development? The question, as it concerns his mental endowments, is not simply whether the brain is more fully developed in civilised than in savage races, but whether progressive development of the brain is the cause of his progressive civilisation. Were the brains of Socrates and Plato, for instance, not already as largely developed as those of Huxley and Darwin; and, accordingly, may not the progress of man be simply dependent on the greater prevalence of well-developed brains, and on the better use made of them which practice leads to? The British people are widely different from what they were in Cæsar's time, and it may be a question how far this is due to the now wider prevalence of good brains, to brains being now absolutely larger, or simply to the better use now made of brains that are neither better nor worse than they were two thousand years ago. We grant that two thousand years is but a small span of the world's history. Still, with such minor problems unsettled, it certainly requires strong

faith in the theory of evolution to trace man back not only to his ape progenitors, but to that far earlier period when the common progenitors of man and of apes were aquatic in their habits. For—

"Morphology plainly tells us that our lungs consist of a modified swim-bladder, which once served as a float. The cloaca on the neck in the embryo of man show where the branchia once existed. At about this period, the true kidneys were replaced by the corpora Wolffiana. The heart existed as a simple pulsating vessel; and the chorda dorsalis took the place of a vertebral column. These early predecessors of man, thus seen in the dim recesses of time, must have been as lowly organised as the lancelet or amphioxus, or even still more lowly organised."

Nevertheless, Mr Darwin sees no difficulty in the matter. Every evolutionist will admit, he says, that the five great vertebrate classes—namely, mammals, birds, reptiles, amphibians, and fishes—are all descended from one prototype; and as the class of fishes is the most lowly organised and appeared before the others, it may be concluded that all the members of the vertebrate kingdom are derived from some fish-like animal, less highly organised than any as yet found in the lowest known formations.

Mr Darwin does not, however, maintain that man's immediate progenitors are to be found among any of the existing apes. They are, as it were, his cousins, not his ancestors; both spring from the same stock, but, from some lucky accident, man got into a groove of progressive development, which led him to the highest place in creation, while his less fortunate relatives are still denizens of the forest or captives in menageries. But to this theory of evolution it has been often objected that the great break in the organic chain between man and his nearest allies cannot be bridged over by any extinct or living species. In Mr Darwin's opinion, however, this objection will not have much weight with those who, convinced by general reasons, believe in the general principle of evolution:—

"Breaks incessantly occur in all parts of the series, some being wide, sharp and defined, others less so in various degrees; as between the orang and its nearest allies—between the tarsius and the other lemurids—between the elephant and in a more striking manner between the ornithomychus or echidna and other mammals. But all these breaks depend merely on the number of related forms which have become extinct. At some future period, not very distant as measured by centuries, the civilised races of man will almost certainly exterminate and replace throughout the world the savage races. At the same time, the anthropomorphous apes, as Professor Schaaffhausen has remarked, will no doubt be exterminated. The break will then be rendered wider, for it will intervene between man in a more civilised state, as we may hope, than the Caucasian, and some ape as low as a baboon, instead of as at present between the negro or Australian and the gorilla."

"With respect to the absence of fossil remains, serving to connect man with his ape-like progenitors, no one will lay much stress on this fact, who will read Sir C. Lyell's discussion, in which he shows that in all the vertebrate classes the discovery of fossil remains has been an extremely slow and fortuitous process. Nor should it be forgotten that those regions which are the most likely to afford remains connecting man with some extinct ape-like creature, have not as yet been searched by geologists."

But, granting all this, should we not still expect a more gradual blending of the animal kingdom than is found to exist? If man is the successor of some remote ape, why should the same causes which led to his origin not ever since have continued in operation, and so have led to the production of innumerable varieties, not separated from each other by broad lines of demarcation, but passing insensibly from one form into another, and as little capable of distinct classification as infancy, childhood, youth, maturity, and old age? And not only with man should this be the case, but with the whole range of the vertebrata, which derive their origin from that fish-like animal which Mr Darwin's eye sees in the dim obscurity of the past as "more like the larvae of our existing marine Ascidians than any other known form."

A large portion of the present work—and, indeed, its most novel portion—is devoted to show the influence of sexual selection in modifying structure, and bringing about progressive development. Strength and beauty naturally carry the day against weakness and ugliness, and on this broad principle the tendency is towards improvement. The weakest go to the wall, and only the best endowed are chosen. This is the rule among the lower animals and among savages, and many interesting details, collected from a variety of sources, are given in its illustration by Mr Darwin; but among mankind in civilised life there is from various causes a wide departure from this practice:—

"With savages, the weak in body or mind are soon eliminated; and those who survive commonly exhibit a vigorous state of health. We civilised men, on the other hand, do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of every one to the last moment. There is reason to believe that vaccination has preserved thousands who from a weak constitution would formerly have succumbed to smallpox. Thus the weak members of civilised societies propagate their kind. No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but, excepting in the case of man himself, hardly any one is so ignorant as to allow his worst animals to breed."

"The aid which we feel impelled to give to the helpless is mainly an incidental result of the instinct of sympathy, which was originally acquired as part of the social instincts, but subsequently rendered, in the manner previously indicated, more tender and more widely diffused. Nor could we check our sympathy, if so urged by hard reason, without deterioration in the noblest part of our nature. The surgeon may harden himself whilst performing an operation, for he knows that he is acting for the good of his patient; but if we were intentionally to neglect the weak and helpless, it could only be for a contingent benefit, with a certain and great present evil. Hence we must bear without complaining the undoubtedly had effects of the weak surviving and propagating their kind; but there appears to be at least one check in steady action—namely, the weaker and inferior members of society not marrying so freely as the sound; and this check might be indefinitely increased, though this is more to be hoped for than expected, by the weak in body or mind refraining from marriage."

"In all civilised countries, man accumulates property and bequeaths it to his children. So that the children in the same country do not by any means start fair in the race for success. But this is far from an unjust evil; for without the accumulation of capital the arts could not progress; and it is chiefly through their power that the civilised races have extended, and are now everywhere extending, their range, so as to take the place of the lower races. Nor does the moderate accumulation of wealth interfere with the process of selection. When a poor man becomes rich, his children enter trades or professions in which there is struggle enough, so that the able in body and mind succeed best. The presence of a body of well-instructed men who have not to labour for their daily bread, is important to a degree which cannot be over-estimated; as all high intellectual work is carried on by them, and on such work material progress of all kinds mainly depends, not to mention other and higher advantages. No doubt, wealth when very great tends to convert men into useless drones, but their number is never large; and some degree of elimination here occurs, as we daily see rich men, who happen to be fools or profligate, squandering away all their wealth."

Although the doctrine of evolution has been for some years before the public, we have entered pretty fully into the consideration of the general subject, and by so doing have been obliged to say but little of the new arguments in its favour contained in the work before us. This, however, is of less consequence, as, however ingenious, they are not well calculated for analysis in our columns, and, moreover, would require more space than we can well afford. The points which Mr Darwin apparently regards as the most difficult of his problem are the wide difference between man and the highest of the lower animals in mental endowments, and the origin of the moral sense; but perhaps it would be just as difficult for him to explain in what manner intelligence and the moral sense are associated with man's present organisation.

Mr Darwin is afraid that the conclusions at which he has arrived will be denounced by many people as highly irreligious, but he is unable to see why it should be more irreligious to explain the origin of man as a distinct species by descent from some lower form, through the laws of variation and natural selection, than to explain the birth of the individual through the laws of ordinary reproduction. As a manifestation of the wisdom of the Deity, it may assuredly be maintained that creation by evolution stands immeasurably higher than creation by individual acts. As regards the immortality of the soul, Mr Darwin believes that—

"Few persons feel any anxiety from the impossibility of determining at what precise period in the development of the individual, from the first trace of the minute germinal vesicle to the child either before or after birth, man becomes an immortal being; and there is no greater cause for anxiety because the period in the gradually ascending organic scale cannot possibly be determined."

Finally, Mr Darwin is of opinion that a descent from apes is not one to be ashamed of:—

"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. For my own part, I would as soon be descended from that heroic little monkey who braved his dreaded enemy in order to save the life of his keeper; or from that old baboon, who, descending from the mountains, carried away in triumph his young comrade from a crowd of astonished dogs—as from a savage who delights to torture his enemies, offers up bloody sacrifices, practices infanticide without remorse, treats his wives like slaves, knows no decency, and is haunted by the grossest superstitions."

Man may be excused for feeling some pride at having risen, though not through his own exertions, to the very summit of the organic scale; and the fact of his having thus risen, instead of having been aboriginally placed there, may give him hopes for a still higher destiny in the distant future. But we are not here concerned with hopes or fears, only with the truth as far as our reason allows us to discover it. I have given the evidence, as it best of my ability; and we must acknowledge, as it seems to me, that man, with all his noble qualities, with sympathy which feels for the most debased, with benevolence which extends not only to other men but to the humblest living creature, with his god-like intellect which has penetrated into the movements and constitution of the solar system—with all these exalted powers—Man still bears in his bodily frame the indelible stamp of his lowly origin."