

RECORD: Ripley, G. 1871. [Review of] *Descent of man: Darwinism*. *Appleton's Journal*, vol. 5, (25 March), p. 350-2.

REVISION HISTORY: Transcribed by Christine Chua and edited by John van Wyhe 2.2020. RN1.

NOTE: The descent of man, and selection in relation to sex. New York: Appleton, vol. 1. (F941.1) and vol. 2. (F941.2).

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DARWINISM.

THE great interest excited by Mr. Darwin's latest work, "The Descent of Man," induces us to copy, from the New York Tribune, the following clear and concise summary of its argument, and of Darwinism generally, written by Mr. George Ripley:

"Not a little curiosity has been awakened with regard to the contents of the present work, the purpose of which is to apply the principles of Natural Selection to the explanation of the origin or descent of the human race. The main questions to which it is devoted relate to the gradual evolution of man, like every other species, from a certain pre-existing form, and to the manner of his development. The conclusion at which the author arrives, after a long process of investigation, is that man is the co-descendant with other species of some ancient and lower form, which became extinct at a period anterior to any records of human experience.

"The evidence of the descent of man from some lower form is sought by the author, in the first place, from the correspondence between his physical structure and that of the lower animals. Man is constructed on the same general type with other mammals. The bones in his skeleton can be compared to those in a monkey, bat, and seal. So it is with his muscles, nerves, blood-vessels, and internal viscera. The brain follows the same law. Man is liable to receive certain diseases from the lower animals, like hydrophobia, variola, the glanders, and others, which he also communicates to them in return. This fact proves the close similarities of their tissues and blood, both in minute structure and composition. Monkeys are liable to many of the same non-contagious diseases that we are. One species that was carefully observed for a long time in its native land was found subject to catarrh, with the usual symptoms, and which when often recurrent led to consumption. They suffered also from apoplexy, inflammation of the bowels, and cataract in the eye. 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 Mr. Darwin has himself seen, smoke tobacco with pleasure. The natives of North-eastern Africa catch the wild baboons by exposing vessels with strong beer, by which they are made drunk. These facts prove how similar are the nerves of taste in monkeys and man, and how similarly their whole nervous system is affected. It is, in short, scarcely possible to exaggerate the correspondence in general structure, in the minute structure of the tissues, in chemical composition, and in constitution, between man and the higher mammals, especially the anthropomorphous apes.

"A fact of curious interest, on which Mr. Darwin dwells at considerable length, is the presence in the higher animals of certain organs in a rudimentary condition, such as the mammæ of male quadruped, or the incisor-teeth of ruminants which never cut through the gums."

Rudiments of various muscles have been observed in many parts of the human body. Not a few muscles, which are regularly present in some of the lower animals, can occasionally be detected in man in a greatly-reduced condition. The power which many animals, especially horses, possess of moving or twitching their skin, is due to a muscle, of which the remnants in an efficient state are found in various parts of our bodies; for instance, on the forehead by which the eyebrows are raised. Some persons have the power of contracting the superficial muscles on their scalps, and these muscles are in a partially rudimentary condition. M. de Candolle communicated to the author a

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singular instance of the inheritance of this power, as well as of its unusual development. 'He knows a family in which one member, the present head of a family, could, when a youth, pitch several heavy books from his head by the movement of the scalp alone; and he won wagers by performing this feat. His father, uncle, grandfather, and all his three children, possess the same power to the same unusual degree. This family became divided eight generations ago into two branches; so that the head of the above-mentioned branch is cousin in the seventh degree to the head of the other branch. This distant cousin resides in another part of France, and, on being asked whether he possessed the same faculty, immediately exhibited his powers. This case offers a good illustration how persistently an absolutely useless faculty may be transmitted.' The extrinsic muscles which serve to move the whole external ear, and the intrinsic muscles which move the different parts, are in a rudimentary condition in man, and are also variable in development. Mr. Darwin has seen one man who could draw his ears forward, and another who could draw them backward. He remarks that, from what he was told by one of those persons, it is probable that most of us, by often touching our ears, and thus directing our attention toward them, could, after repeated trials, recover some power of movement. There is a little peculiarity in the external ear, pointed out by a celebrated sculptor, which is common to man and to monkeys. This consists in a small blunt point, projecting from the inwardly-folded margin, and visible when the head is viewed from directly in front or behind. These points are variable in size and position, standing either a little higher or lower, sometimes occurring on one ear, and not on the other. Mr. Darwin concludes that the occasional reappearance of this feature in man is a vestige of formerly-pointed ears, a dim sense of which was doubtless the origin of the legend which Hawthorne has turned to such admirable account in his weird creation of the 'Marble Faun.'

"Mr. Darwin mentions, as a noteworthy circumstance, that the posterior molar or wisdom teeth appear to be tending toward the rudimentary state in the more civilized races of man. These teeth are rather smaller than the other molars, as is the case with the corresponding

teeth in the chimpanzee and the orang. They have only two separate fangs, and do not cut through the gums, till about the seventeenth year. They are much more liable to decay, and are earlier lost than the other teeth, In the Milanian races, on the other hand, wisdom teeth are usually furnished with three separate fangs, and are generally sound. They also differ from the other molars in size less than in the Caucasian races. The difference between the races is accounted for by the fact that the posterior dental portion of the jaw is shortened in those that are civilized, and this shortening may be attributed to the habit of feeding on soft, cooked food, and thus making less use of the jaw. In illustration of this point, Mr. Darwin was informed by a distinguished American traveller that it is becoming quite a common practice in the United States to remove some of the molar teeth of children, as the jaw does not grow large enough for the perfect development of the normal number.

"The bearing of the argument from the existence of rudimentary organs in the human system is easy to be understood. The homological construction of the whole frame in members of the same class is intelligible, if we admit their descent from a common progenitor, together with their subsequent adaptation to diversified conditions. On any other view it is impossible to account for the similarity of pattern between the hand of a man and monkey, or for the foot of the horse, the flipper of the seal, or the wing of the bat. It does not help the matter to say that they have all been formed on the same ideal plan. Nor can any explanation but that of a common progenitor account for the wonderful fact that the embryo of a man, a dog, a seal, or a bat, can at first hardly be distinguished from each other. The presence of rudimentary organs only becomes intelligible when we suppose that a former progenitor possessed the parts in question in a perfect state, and that under changed habits of life they were greatly reduced. We are thus enabled to see how 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. Hence, argues Mr. Darwin, we are bound to admit their community 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 illusion to lead the judgment astray.

"The questions suggested by a comparison between the mental faculties of man and the lower animals, present more serious difficulties on the theory of Natural Selection than those involved in their physical differences and resemblances. Even Mr. Wallace, one of the ablest supporters of the doctrine, who was led to its adoption by his own independent personal researches as a naturalist, hesitates to apply it to the explanation of the phenomena of mind, at least to the extent to which it is carried by Mr. Darwin. But the latter makes no exception to the sufficiency of the principle. His reasonings concerning its application -to the mental powers are marked by singular ingenuity, and doubtless form the most significant portions of the present volume, although there are few thinkers but will pause before admitting their validity. He takes the position that there is no fundamental difference between man and the higher mammals in their mental faculties. As man possesses the same senses with the lower animals, his fundamental intuitions must be the same. He has also some instincts in common with them, as that of self-preservation, sexual love, the love of the mother for her new-born

child, and so forth. But man has perhaps fewer instincts than those possessed by the animals which come next to him in the series. The lower animals, like man, evidently feel pleasure and pain, happiness and misery. There is no happier sight than that of young animals, such as puppies, kittens, lambs, and the like, when playing together, like our own children. The lower animals are excited by the same emotions as ourselves. Terror, for example, acts in the same manner on them as on us, causing the muscles to tremble, the heart to palpitate, the sphincters to be relaxed, and the hair to stand on end. Suspicion, the offspring of fear, is eminently characteristic of most wild animals. Every one knows how liable animals are to furious rage, and how plainly they show it. The love of a dog for his master is notorious. Animals not only love, but have the desire to be loved. They feel emulation, and love approbation or praise. A dog carrying a basket for his master exhibits a high degree of pride. The dog also feels shame, as distinct from fear, and something very like modesty when begging too often for food. Several observers have stated that monkeys certainly dislike being laughed at; and they sometimes invent imaginary offences. A baboon in the Zoological Gardens always got into a rage when his keeper took out a letter or book and read it aloud to him; and his rage was so violent on one occasion, which Mr. Darwin witnessed himself, that he bit his own leg till the blood flowed. Animals enjoy excitement and suffer from ennui, as may be seen with dogs and monkeys. They feel wonder and curiosity.

Brehm gives a curious account of the instinctive dread which his monkeys exhibited toward snakes; but their curiosity was so great that they could not desist from occasionally satiating their horror in a most human fashion, by lifting up the lid of the box in which the snakes were kept. I was so much surprised at his account, that I took a stuffed and coiled-up snake into the monkey-house at the Zoological Gardens, and the excitement thus caused was one of the most curious spectacles which I ever beheld. Three species of *Cercopithecus* were the most alarmed; they dashed about their cages and uttered sharp signal-cries of danger, which were understood by the other monkeys. A few young monkeys and one old Anubis baboon, alone took no notice of the snake. I then placed the stuffed specimen on the ground in one of the larger compartments. After a time all the monkeys collected round it in a large circle, and, staring intently, presented a most ludicrous appearance. They became extremely nervous; so that when a wooden ball, with which they were familiar as a plaything, was accidentally moved in the straw, under which it was partly hidden, they all instantly started away. These monkeys behaved very differently when a dead fish, a mouse, and some other new objects, were placed in their cages; for, though at first frightened, they soon approached, handled, and examined them. I then placed a live snake in a paper bag, with the mouth loosely closed, in one of the larger compartments. One of the monkeys immediately approached, cautiously opened the bag a little, peeped in, and instantly dashed away. Then I witnessed what Brehm has described, for monkey after monkey, with bend raised high and turned on one side, could not resist taking momentary peeps into the upright bag, at the dreadful object lying quiet at the bottom.

It would almost appear as if monkeys had some notion of zoological affinities, for those kept by Brehm exhibited a strange, though mistaken, instinctive dread of innocent lizards and frogs. An orang, also, has been known to be much alarmed at first sight of a turtle.'

"Many animals have the power of imitation; all have the faculty of attention. They have excellent memories for persons and places. Nor are they destitute of imagination, or of the reasoning faculty to a certain extent.

'Many facts have been recorded in various works showing that animals possess some degree of reason. I will here give only two or three instances, authenticated by Rengger, and relating to American monkeys, which stand low in their order. He states that when he first gave eggs to his monkeys, they smashed them and thus lost much of their contents; afterward they gently hit one end against some hard body, and picked off the bits of shell with their fingers. After cutting themselves only once with any sharp tool, they would not touch it again, or would handle it with the greatest care. Lumps of sugar were often given them wrapped up in paper; and Rengger sometimes put a live wasp in the paper, so that in hastily unfolding it they got stung; after this had once happened, they always first held the packet to their ears to detect any movement within. Any one who is not convinced by such facts as these, and by what he may observe with his own dogs, that animals can reason, would not be convinced by any thing that I could add.'

"It has been alleged that man alone is capable of progressive improvement. But every one who has had any experience in setting traps knows that young animals can be caught much more easily than old ones. With respect to old animals, it is impossible to catch many in the same place, and in the same kind of trap, or to destroy them by the same kind of poison. They learn caution by seeing their brethren caught or poisoned. Our domestic dogs, are descended from wolves and jackals, and, though they may not have gained in cunning, they have advanced in certain moral qualities, as in affection, trustworthiness, temper, and probably in general intelligence. The common rat has conquered several other species throughout Europe, in parts of North America, New Zealand, and China. The victory over a much larger

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kind may be ascribed to the superior cunning of the common rat; and this quality is probably due to the habitual exercise of all its faculties in avoiding extirpation by man, as well as to his having successively destroyed nearly all the less cunning or weak-minded rats.

"It has often been said that no animal uses a tool. But the chimpanzee in a state of nature cracks a native fruit, somewhat like a walnut, with a stone. An American monkey has been taught to break open hard palm-nuts, and afterward, of its own accord, it used stones to open other kinds of nuts, as well as boxes. It thus also removed the soft rind of fruit that had a disagreeable flavor. Another monkey was taught to open the lid of a large box with a stick, and afterward it used the stick as a lever to move heavy bodies. In these cases, stones and sticks were employed as implements; but they are likewise used as weapons. In Abyssinia, when the baboons of one species descend in troops from the mountains to plunder the fields,

they sometimes encounter troops of another species, and then a light ensues. The first party rolls down great stones, which the others try to avoid, and then both species rush furiously against each other with a terrible uproar. A monkey in the Zoological Gardens, which had weak teeth, used to break open nuts with a stone. The same animal, after using the stone, would hide it in the straw, and would not let any other monkey touch it. Here we have the idea of property, but this idea is common to every dog with a bone, and to most or all birds with their nests.

"We have selected a few of the popular illustrations which are brought by Mr. Darwin to explain the affinities between man and the inferior animals, which, in his view, compel us to refer the origin of both to a common, but long since extinct, progenitor. They afford an example of the scope and method of his reasonings, but present only an imperfect idea of the variety and richness of his suggestions. Many of the topics of primary importance in the discussion, and which he unfolds at length, cannot even be alluded to in our limited space, and we must refer our readers for their explanation to the volume itself. A word or two as to the development of the rude forefathers of our race must close this imperfect notice. In the primeval state of society, the individuals who were the most sagacious, who invented and used the best weapons or traps, and who were best able to defend themselves, would rear the greatest number of offspring. The tribes with the largest number of men thus endowed, would increase in number and supplant other tribes. As soon as the progenitors of man became social (which probably occurred at a very early period) the mental faculties would receive an important aid in the principle of imitation, together with reason and experience. The habitual practice of each new art must, in some slight degree, strengthen the intellect. In order that primeval men, or 'the ape-like progenitors of man,' should have become social, they must have acquired the same instinctive feelings which impel other animals to live in a body. They would have felt some degree of love for their comrades; they would have warned each other of their danger; and have given mutual aid in attack or defence. This implies a certain amount of sympathy, fidelity, and courage. A tribe possessing such qualities in a high degree, would be victorious over other tribes, but in course of time would, in its turn, be overcome by some other and still more highly-endowed tribe. Thus the social and moral qualities, which now form the chief distinction of the race, would tend slowly to advance and be diffused throughout the world.

"Whatever judgment may be pronounced as to the tendency of Mr. Darwin's views of the origin of man to humble the natural pride of ancestry, we ought not to lose sight of the fact that no philosophical writer of the present day sets forth a more exalted conception of the actual faculties and endowments of the race as developed under the highest forms of moral and religious culture in the progress of civilization lie almost goes out of his way to do justice to the ideas and beliefs which have been regarded by the wisest thinkers in every age as the crowning glory of humanity. In this respect, his system presents a favorable contrast to the shallow, sensualistic, French philosophy of the eighteenth century, which resolves the most refined sentiments of our nature into fleshly illusions.

'The question,' says Mr. Darwin, 'whether there exists a Creator and Ruler of the Universe

has been answered in the affirmative by the highest intellects that have ever lived. I fully subscribe to the judgment of those writers who maintain that of all the differences between man and the lower animals, the moral sense or conscience is by far the most important. This sense, as Mackintosh remarks, "has a rightful supremacy over every other principle of human action;" it is summed up in that short but imperious word ought, so full of high significance. It is the most noble of all the attributes of man, leading him, without a moment's hesitation, to risk his life for that of a fellow-creature; or after due deliberation, impelled simply by the deep feeling of right or duty, to sacrifice it in some great cause."

[George Ripley (1802-1880), an American transcendentalist and utopian socialist.]