THE DESCENT OF MAN.*

Fully noteworthy with the candor, the modesty, and the earnestness which characterize the author of the "Origin of Species" is the self-adjustment that has not only led him to avoid anything like an answer in the many violent attacks upon him, but has also enabled him to give so many years an application of his theory to the creation of the race that he "should thus only add to the prejudice against me," and wished that "Natural Selection" should be considered as an application of its merits as a scientific theory alone. But it was not to be expected that a sensation-loving public, and those who write for it, exercise an equal discretion; and soon attention was called to an article in the close of the "Origin of Species"—"Light will be thrown on the origin of man, and on his history"—with others in which he expressed that "all animals are descended from four or five—perhaps only two—single progenitors," and since the human body is unquestionably more superior, and mammalian, the conclusion was inevitable that the animal progenitors were the remote ancestors not merely of dogs, cats, and of monkeys, but likewise of man himself. Nor was this all. The natural narrowing of the supposed "great gulf" between man's body and that of the apes has slowly forced upon shrinking humanity the proposition that our nearest relatives, not only zoologically, but genealogically, are the so-called anthropoid and tailless apes—the orang, the gorilla, and chimpanzees—which are, if not themselves our ancestors, at least the developed descendants of some ancient, ape-like, and now extinct forms. The storm raised by these ideas has not yet ceased; even now, they are called upon to stop the progress of the heresy, and are answered: "What is the use of your asserting, Sunday after Sunday, that man made only a little lower than the angels, when right under your nose are anatomical miscreants who contend that he is only a little lower than the monkeys?"

All such objectors this last work will be evidence of its author's unselfish and foreordained eternal condemnation. But to more minds, it will appear the most bold and impartial exposition of the most striking natural science opinion respecting the origin of man and his descent to the lower animals. But here a very essential qualification should be made. The word "man" includes three very different ideas: the human body, which, whatever its original origin, is now redeveloped from a germ which is to all appearance identical with the germ of a fish or a serpent—even at a much later period the human eminently distinguishable from that of a dog, and the fully-formed individual differs less from the higher apes than they do from the lower. The second part of man is the animal mind and instinct and in no which we surely possess in common with the lower animals, which, perhaps, as Darwin holds, may be only a higher development of the same. But the third and essential idea of man is of his immortal soul although some hold that beasts, too, are immortal, and although there concludes that even conscience and the religious sentiment with a creator are not inherent with man (vol. ii., p. 377), yet on the folklore he implies that at some stage in his upward progress he did so as immortal being, though, while admitting the impossibility realizing that stage, he suggests that it is really of no more consequence to determine the exact period when the forming germ the immortal soul in the development of a single individual. At the same time we accept what he here says as warrant for the exclusion of the part of man, with all its powers and capacities, from the discussion of the present and past relations to the lower animals. With this qualification, we may let our author speak for himself, from the conclusion of the "Descent of Man," admitting that he presents his case better than any one can do it for him:

"The main conclusion arrived at in this work, and now held by many naturalists who are well competent to form a sound judgment, is that man is descended from some of the lower animals, and that the laws and principles of facts upon which this conclusion rests will never be shaken;—

the close resemblance of the embryo of man to that, for instance, of a dog — the construction of the brain and the like progressive additions to the mind, all probably lived in society" (vol. i. p. 148). [According to most accounts, however, the anthropoid apes are not very social.] "There can be hardly a doubt that the ancestry of these countries, which include nearly all the whole civilized world, were once in a barbarous condition" (p. 176). "The highest form of religion, the grand idea of God having sin and loving righteousness, was unknown during primeval times" (p. 175, p. 92). [And he further argues that all morality and conscience sprang by "natural selection from purely selfish sources" (p. 157).] "It would be impossible to fix upon the stage when ape would become man through a series of connecting forms, and it is a matter of very little importance to the p. 220.

"The problem of the advance of savages toward civilization is at present too difficult to be solved" (p. 161).

"By considering all these things, we can partly recollect the imagination the former condition of the world, when the human species was descended from a hairy quadruped, furnished with a tail and pointed ears, probably arboreal in its habits, and an inhabitant of the Old World. This creature, if it had been examined by a naturalist, would have been classified among the quadrupeds as surely as would the common and still more ancient progenitor of the Old and New World monkeys. The quadrupeds, and all the higher mammals, are probably derived from an ancient mammalian animal, and this, through a long line of diversified forms, either from some reptile-like or some amphibian-like creature, and this again from some fish-like animal. In the dim obscurity of the past, we can see that each step of evolution of all the vertebrata must have been an aquatic animal profited with branchiae, with the two sexes united in the same individual, and with the most important organs of the body (such as the brain and heart) imperfectly developed. This animal seems to have been more like the larvae of our existing marine animals than any other known form.

We may here remark that the omission of Births from this genealogical tree is less a defect than at first appears; for, although we are far from being willing to give up the old class of Aves and consider Birds as only outlying and rather aberrant members of the new combination Sauroupeida (which includes reptiles, lizards, alligators, testudines, and ichthyosaurus), yet their whole organization brings them nearly to the nearer reptiles that it is easier to regard them as a divergent branch from the stem which afterward produced the mammals, and at last man.

A careful study of the "Descent of Man" has added many to the general and special difficulties of natural selection which arose during the examination of the "Origin of Species"; but we have space for only a few cases. Our author gives no sufficient grounds for his belief that our "ape-like progenitor" possessed a caudal appendage. Man has a rudiment of a tail which is in the large part present in our nearest productions, but since it does not increase the subsequent development of the legs that lie along it into obscurity, whence it but rarely emerges as a "small external rudiment of a tail" (i., p. 45). "No explanation has ever been given of the loss of the tail by certain apes and by man," but the "great diversity in its length (consisting in some monkeys of five, and in others of twenty vertebrae) indicates that it is of no much importance to them, and, therefore, apt to become more or less rudimentary" (i., p. 144). But how, then, can we account for the great length of the tail in some Old World monkeys (with whom it is not peculiar) as we see in the New World species, since we are further told (p. 145) that "modifications which are of no service to an organism cannot have been acquired through natural selection;" and, again, if, "being of little importance, they are likely to become rudimentary," they become exceptions to the other general rule given in vol. ii., p. 370: "Modifications formerly of importance, but no longer of any special use, will be long inherited." Our author seems to base his conclusion that our ape-like progenitor possessed a tail, only upon its occasional reappearance as a rudiment susceptible to reversion; but surely a few more generations back can be no obstacle to the idea. What follows in the commencement of the Hoolock Gibbon (which is less man-like in its external respects than the noseless gorilla and chimpanzee), while it is carried to a more extreme in the *acrobates *macaco, a yet lower monkey, which possesses a tail of considerable length.

These, and other cases which we must omit, are not given as in any way militating against the general hypothesis of Derivation, but only to show the inconsistencies into which we are led in the effort to account for the origin of organisms by means of natural selection of "minute infinitesimal variations."

In the "Origin of Species" two pages were devoted to that kind of selection which is called "sexual," but the conviction of the necessity of supposing of its importance, has led our author to devote the greater part of his last work to the elucidation of sexual selection, and to conclude that of all the causes which have led to the differences between the races of man, and, to a certain extent, between man and animals, it has been by far the most efficient. The terms "natural" and "sexual selection" are defective, as our author admits, since both are natural, as contrasted with artificial selection by man, but they are defined as follows:

"Natural selection depends on the success of both sexes, at all ages, in relation to the general conditions of life; sexual selection depends on the success of certain individuals of the same sex in relation to the propagation of the species" (ii. p. 380).

The latter is further defined:

"The sexual struggle is of two kinds: in the one, it is between the individuals of the same sex, generally the male sex, in order to drive away or kill their rivals, the females remaining passive; while in the other, the struggle is likewise between the individuals of the same sex, in order to excite or charm those of the opposite sex, generally the females, which the males do not remain passive, but select the more agreeable partners" (ii. p. 380).

The result is summed up as follows (ii. p. 384):

"Courage, pugnacuity, perseverance, strength, and size of body, weapons of all kinds, musical organs—both vocal and instrumental—bright colors, stripes and marks, and ornamental appendages, have all been indifferently gained... through the influence of love and jealousy, the appreciation of the beautiful in sound, color, and form, and through the exertion of a choice." It would appear, then, that selection is through love or through war, but that in either case the successful competitor is the more likely to perpetuate those sexual peculiarities he may possess as to strength, weapons, or ornament, and thus originate a new breed, by which, by wider and wider divergence, will, in course of time, be entitled to rank as a new species, and may finally differ generally as to family, ordinal, class, and branch characters from the parent stock. Supposing this to be true, Darwin is right in denying the existence of anything like species, genera, etc., excepting as more or less different varieties ("Origin of Species," 63, 153, 432, and 483); and this is totally incompatible with the view so forcibly stated by Agassiz: "Individuals alone have a material existence; species, genera, and all higher groups exist only as categories of thought in the supreme intelligence; but as such have as truly an independent existence, and are as unvarying as thought itself after it has been once expressed."

Let us glance, however, at some special difficulties of the theory of "selection in relation to sex." The male salmon fight with each other for the females, and the larger may naturally be supposed to have the advantage, yet the males are smaller than the females (vol. ii. p. 7), as is generally the case with fishes, and Darwin admits that this fact is surprising. In some cases, even, there is antagonism between natural and sexual selection; for instance, "stags are loaded with an additional weight of many pounds, and will be greatly retarded in their flight from wild beasts."

"Male birds have sometimes acquired ornamental plumes at the cost of retarded flight, and at the cost of some loss of power in their battles with rival males" (ii. p. 248); and although our author would account for these and other cases by assuming that these spreading antlers enabled the stags best provided with them to overcome their rivals, and that this was of more consequence than the ability to escape their pursuers, yet the admitted and inexplicable facts of capture of the part of the females of many species (ii. p. 350), causing them to prefer some other than the conqueror, make the explanation less satisfactory.

A still more difficult case is that of the "spike-horn bucks," which seem to be increasing in number among the Adirondacks. "The spike-horn is a more effective weapon than the antler in combat of all kinds, and far less likely to hinder escape from beasts of prey. Undoubtedly the first specimen was merely an accidental freak of nature. But his spike-horns gave him an advantage, and enabled him to propagate his peculiarity" (vol. ii. p. 245).

Now, when the remote ancestors of these deer first began to occupy the land, it is more likely upon any kind of hypothesis, that the horns were spiked or simple than branching. If, then, they did not arise now, why were they not then? and how did antlers originate and become the rule? Again, if the other kind of sexual selection be appealed to, we must assume that the females had an inherent admiration for antlers, and
selected such individuals as had them. But aside from the
culture of accounting by natural selection for any such later
why is it not equally operative at the present day? In fact,
aknowledges the difficulty in these cases, and we recommend
study of the explanation given for the long and backward-on
of the oxy lereony (on page 541 of vol. ii), as an instance of
factory nature of all reasoning from formal selection when
particular cases. Everywhere some other condition is required
no sufficient cause is assigned.

Darwin is not only ascribed to selection the power of pre-
from monkeys, but also of originating all the many shades of

to color, length, and distribution of hairy covering, form of feat
and skull, which distinguish the human races—differences vs
regard as specific in their character. But he seems to make
than is necessary for us to agree with him, by holding that all
distinctions have arisen since the birth of the first human
more time would have been allowed by supposing that sever
progenitors," in different parts of the world, produced as man-

We are led to say this because Mivart is inclined to do
even the millions of years which geology allows would be
the production of the human races by the slow process of selec

As to color, if we suppose black to have been gradually by se-
tion (I. 380), what was the original color? and if "a
savages, the people of each tribe admire their own characte
(p. 397), how can we account for any divergences from the
color of the skin as the horn races? The same inconsistent
the above general law and the existing facts is found in respect
characters that distinguish the races of man, for since these ras-
tions are confessedly of no value in respect to ordinary natural
we can only account for the preservation and perpetuation of
in color, length of hair, etc., by assuming an inherent pron-

to the minds of the women for things which had not previously se-
discouragement of the rule above given.

We will not discuss in detail the difficulties which Wallace
in the way of the production of human beings through the mecha
of selection, but refer the reader to Mr. Huxley's instructive work,
win alludes to these objections, and attempts to refute them, to
in do not think he is successful; on the contrary, we are in-
inclined to believe that selection is insufficient to account

A quotation of our author:

"Variability is the necessary basis for the action of selec-
wholly independent of it (I. 286). We are, therefore, in the ca-
utility, we are in all cases very insignificant (I. 297)."

determine the manner of transmission of sexual characters (I. 237)
laws, which always cause, and liable to change (I. 286). So
be due to the action of some unknown cause (I. 286).
residual of change, perhaps a large one, must be left to the un-
understanding, and those unknown agencies which combine
strongly marked and abrupt deviations of structure in dif-
uctions (I. 145, and I. 346). In the greater number of cases it
say that the cause of each slight variation and of each mean-
be much more in the nature or constitution of holding the
the nature of the surrounding conditions, though new and chanci-
certainly play an important part in exciting organic changes of
tion (I. 371).

Here is almost all that is required by Mivart, and it is, as we
him of admissions in the later edition of the "Origin of Specie-
tantamount to a change of front in the face of the enemy, and
these admissions occur in connection with the attempt to re-
trine of selection to a single species, and that the highest, it may
without intending a pan, that the theory is disproved by the "su-
atum ad hominem." Surely, if Darwin is obliged to fall back
known agencies, and upon such vague hypotheses as pangenetic,
ishes the means of originating species by natural selection, why
not, like Mivart, subscribe to the only power of producing spe-
strict selection to the preservation of favorable individual to
within the species?

It is objected to the view of Mivart that it is merely giving a
a hypothetical principle, and means no more than to say that "a
narrative because of its soporific quality." Why not? There are
thing of which we merely know that they are such and such, and

"The degrees of science simply lessen their number, but
never do more than reduce them to one, the invisible First Cause.

"Contributions to the Theory of Natural Selection."