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[page] 7

NEW WORK BY MR. DARWIN.

The Variation of Plants and Animals under Domestication. By Charles Darwin, M.A. With illustrations. [F877.1 and F877.2]

In his work on the Origin or Species by means of Natural Selection, or the Preservation of Favoured Race, in the struggle for Life." Mr. Charles Darwin "promised to publish soon the facts on which the conclusions given in it were founded"; and after long delay "this first work" is published.

The excuse for delay is we are sorry to say ill health; and we may add, in further explanation, the preparation of two books: one on the fertilization of plants by the agency of insects and another on vegetable climbers and creepers. But even now we are told to wait for the fact upon which Mr. Darwin founded his conclusions. This is only "the first work"; and if the other instalments must be waited for as many years as the species discussed may require, the generation of men who read the earliest statement of the hypothesis will all have passed away before Mr. Darwin's task shall be done.

The titles of the two books on species are significant; for there is a notable difference between "the Origin or Species" and "the Variations" of the domestic plants and animals. Henceforth, the rhetoricians will have a better illustration of anticlimax than the mountain which brought forth a mouse, or the god of war who was lieutenant-colonel to the Earl or Marr, in the discoverer of the origin or species who tried to explain the variations or pigeons! For this is the literal and exact truth. Bulky and closely-printed as these post-octavo volumes are, they contain nothing more in support of the hypothesis of origin by selection than a more detailed re-asseveration of the guesses founded upon the so-called variations of pigeons. This is, in fact, the substance of Mr. Charles Darwin's own description of the scope of his present work:-

"The object of this work is not to describe all the many races of animals which have been domesticated by man, and of the plants which have been cultivated by him; even if I possessed the requisite knowledge, so gigantic an undertaking would be here superfluous. It is my intention to give under the head of each species only such facts as I have been able to collect or observe, showing the amount and nature of the changes which animals and plants have undergone whilst under man's dominion, or which bear on the general principles of variation. In one case alone, namely in that of the domestic pigeon, I will describe fully all the chief races, their history, the amount and nature of their differences, and the probable steps by which they have been formed. I have selected this case, because, as we shall hereafter see, the materials are better than in any other; and one case fully described will in fact illustrate all others. But I shall also describe domesticated rabbits, fowls, and ducks, with considerable fulness."

M. Flourens and M. Pouchet have done Mr. Darwin the honor of refuting him. They have paid an amount of attention to his opinions which no British philologist of similar standing has seemed it worth his while to bestow upon them.

After Bell, the investigator who has thrown most light on the nervous system is Flourens, and a fair statement of the facts and arguments of such an opponent was expected from Mr. Darwin. But we have searched this work in vain for any such fair fighting. The readers of Mr. Darwin will learn from his pages that M. Flourens has made experiments in crossing dogs, wolves, jackals, horses, asses, monkeys, and published books on instinct and longevity; but not that he has sent forth a volume proving once more the old doctrine of immutability of species in opposition to the imaginations of Mr. Darwin. What we have just called imaginations their author, no doubt, calls "his conclusions," while explaining them to be but commencements, showing thereby that the contradictory stories called "bull" are not exclusively of Irish manufacture. Whilst ignoring the work of M. Flourens, Mr. Darwin acknowledges the existence of M. Pouchet's "Plurality of Races," a far less formidable performance, which has been translated into English. But he says he cannot perceive the assertions." Now we are sadly mistaken if there are not clear proofs in the pages of the book before us that, on the contrary, Mr. Darwin has perceived, felt, and yielded to the force of the arguments or assertions of his French antagonists. M. Pouchet insisted that variation under domestication throws no light on the natural modification of species; and Mr. Darwin, surrendering entirely to the force of his remark, postpones to future works the consideration of natural modification of species.

"In the second work," he says, "I shall discuss the variability of organic beings in a state of nature, namely, the individual differences presented by animals and plants, and those slightly greater and generally inherited differences which are ranked by naturalists as varieties or geographical races."

"In a third work I shall try the principle of natural selection by seeing how far it will give a fair explanation of the geological succession of organic beings, their distribution in past and present times, and their mutual affinities and homologies." "The principle of natural selection may be looked at as a mere hypothesis," say Mr/ Darwin himself, "until it explains these and other large bodies of facts;" that is to say, for at least a very long time to come. Mr. Darwin's third work, it is obvious, must not be published until after the students of the remains of ancient life shall have discovered "the geological succession of organic being," - a thing which the past generation of them believed they knew, and the present generation are sure is not known.

If Mr. Darwin's supposition is to be deemed a mere hypothesis until it shall satisfactorily explain what is not known, the discussion of it is adjourned by its author sine die. Long before the condition of proof stated by Mr. Darwin shall have been complied with, the author of it and the opponents of it will have passed away, and their controversies with them.

"If," says Mr. Darwin, "organic beings had not possessed an inherent tendency to vary, man could have done nothing," the reply is, that man has done nothing, and that there is an inherent tendency not to vary. Not merely has man never originated a species, he has never

permanently varied a species, - not having able to produce varieties even, but only breeds, - and having, whilst producing them, found that species are without variableness or the shadow of turning. The immutability of species is maintained by two unconquerable laws - the ultimate sterility of breeds, and their reversion to the type when let alone. Man can influence size, which is a variation of individuals and not the species. Man can modify the flowers and fruits of plants within certain inexorable limits, and obtain size or flavour or varying blooms; but specific characters elude his power entirely. Permanent reproduction is the fundamental idea of species; and there is no continuous fecundity in breeds, their sterility or reversion being inevitable. What man seems to be most able to reproduce and transmit through several generations are diseases. Buffon, George and Frederic Cuvier, and Flourens have been able to cross the dog and the dog-wolves, and no more. The conclusions of M. Flourens are, in fact, founded upon experiments which have been continued for about a hundred years.

As in his book on the Origin of Species, so in the work on Domestic Animals, Mr. Darwin dwells chiefly on the breeds of pigeons. His animated world rests upon the back of a pigeon; and even the pigeon, as will appear by and by, upsets him. Meanwhile, it may be as well to show from what insignificant premises Mr. Darwin can obtain the largest inferences. The period of gestation is an unalterable character of species; but Mr. Darwin fancies this result of scientific observations of ages is impugned by a statement, by somebody, that there is a difference of four, five or six days between gestation pf merino and southdown sheep. The doctrine of physiological science is, that the period of healthy gestation is fixed; the shortening or prolonging of the period being due to disease, all unduly born offspring being unhealthy. Of course, if breeds of animals and crossings of plants are not permanent, the results of breeding and crossing only prove the immutability of species. Now all breeds are sham.

The tendency pf peculiarities to perpetuate themselves is so much weaker than the immutability which causes sterility or reversion, that breeds are not maintained by breeding merely, but by breeding, and weeding. “There is a black sheep in every flock,” says the proverb, which the cattle-breeders have given to the world after themselves deriving it from their experience of the recurrence to wild colours in the most carefully tended of snowy flocks. When seedlings return to their wild types, the gardeners call them “rogues,” and condemn them to the ashpit. The similarity of breeds, like the height of soldiers, is maintained by leaving out the unsuitable individuals. As to the reversion of sheep, the fact seems to have been proverbial in the time of Edward Fairfax, the poetical translator of “Jerusalem Delivered,” for in his Fourth Eclogue he makes Alexis exclaim,

And let my sheep to shag-haired musmous turn.

Mr. Darwin himself gives some striking instances of the potency of the tendency in sheep to reversion in colour, a ram with two small black spots on his sides having begot seven black rams on seven white ewes, and the blackness persisting for six or seven generations.

Mr. Darwin mentions rabbits as one of the species of animals which seem to countenance his views.

"Finally," says Mr. Darwin, "from the three cases of the rabbits which have run wild in Porto Santo, Jamaica, and the Falkland Islands, we see that these animals do not, under new conditions of life, revert to or retain their aboriginal character as is so generally asserted to be the case by most authors."

This inference is obtained in this way. Mr. Darwin minutely examines the bones of wild and tame rabbits, and, finding notable differences, says - If palæontologists had found such differences among fossil bones, they would have said they belonged to distinct species; and he says this, although he is well aware that the authors of classifications have made larvæ of one species perfect animals of another, males of one species and their females of another, and the winter bird a different species from a summer bird. The reduction of the numbers of so-called species is the daily business of zoologists and botanists. No doubt, the brains of tame rabbits from disuse do not keep pace in size with their bodies, which by breeding have been doubled in weight. Mr. Darwin says, as just quoted, that rabbits do not revert to the aboriginal character; and yet in another place he says -

"When variously coloured tame rabbits are turned out in Europe they generally re-acquire the colouring of the wild animal." Notwithstanding the citation of the case of the Porto Santo rabbits to prove that these animals do not revert, his own account of them is, that they descend from a little or tame rabbits, which have in the course of 400 years become smaller than the wild rabbits of England. The rabbits of Jamaica have, it is said, become extinct; and certainly extinction is not reversion. There remains the case of the Falkland rabbits to support the denial of reversion. Within recent times sealers have turned out rabbits on the Falkland Islands, and Mr. Darwin has heard from an admiral that the rabbits on Pebble Island are mostly hare-coloured, and on Rabbit Island mostly bluish; of what colour their progenitors were when turned out is not known.

But fowls may be more potent allies of the hypothesis. From the shy habits of wild poultry, and the impenetrability of the jungle into which they retreat, it is not yet quite certain that the systematic classifiers have correctly ascertained and defined the wild species of poultry; the balance of proof seems, however, to be in favour of the opinion that the breeds of tame poultry have all been derived from one of them; although this last view is not yet established definitely. In Burmah, wild and tame poultry are constantly producing transitional forms, Gallus Bankiva is the wild species to which several of the domestic breeds seems to revert. Mt Tegetmeier is the authority for the statement that purely-bred game, Malay, Cochin, Dorking, Bantars, and even Silk fowls may frequently or occasionally be met with, which are almost identical in plumage with G. Bankiva. Breeders, trying to produce golden-spangled cocks, find they have bred instead black-breasted and red backs. The glossy black Spanish cock and the black-breasted game-cock produce, by white hens, similar offspring, owing to partial reversion. Mr. Darwin paired a Spanish cock and a Silk hen, and the result was a marvellous one for him; a cock which, when strutting about, resembled not at all his black Spanish father and his little silky mother but a jungle cock very strikingly.

Ducks are probably tame mallards. The wild duck is not known in the Malayan archipelago, and yet the tame ducks bred there do not differ from the ducks of Europe. Men, by

preventing young ducks from swimming and flying, have made the elegant and nimble wild animal the waddling, but heavy and succulent table duck. Records exist of the process by which this alteration has been wrought. Aylesbury ducks which are kept in houses hatch in January, whilst common ducks wait until March; but the descendants of the early breed become as tardy as the others when kept for a few generations in the common way. The Aylesbury and the Labrador ducks are both deemed true breeds, yet from a cross of them issued a drake like a mallard.

The pigeon remains for consideration. If the pigeon does not support it, the sooner the hypothesis is recanted the better. The breeds of pigeons have been so recently described in this journal, that it will not be necessary to do more here than to examine the facts alleged by Mr. Darwin in favour of his hypothesis. Pigeons revert astonishingly whenever they have the chance. The permanence of the breeds of Indian Spot or Kulmi Lotans is, no doubt, asserted by Mr. Darwin, because a description of it occurs in the "Ayeer Akbety," which was written in the year 1600. This fact is certainly a remarkable and impressive example of the tenacity of hereditary disease when its transmission is artificially fostered by breeders who profit by it. Fifty shillings a pair is to be obtained for pigeons which have lost their balance. Like every other breed, the Lotans are kept up by breeding and weeding. The permanence of the breed is not a natural, but is an artificial permanence; good for nothing, therefore, as a fact in support of an hypothesis which tries to explain the origin of species by natural selection, or the preservation of favoured races in the struggle for life.

A few summary words. On the origin of species Mr. Darwin has nothing, and is never likely to have anything to say; but on the vastly-important subject of inheritance, the transmission of peculiarities once acquired through successive generations, this work is a valuable storehouse of facts for curious students and practical breeders. - Athenæum, Feb. 15.