

L I T E R A T U R E.

THE VARIATION OF ANIMALS AND PLANTS UNDER DOMESTICATION. By Charles Darwin, M.A., F.R.S., &c. In two Volumes; with Illustrations. *London: John Murray, Albemarle-street.* 1868.

The author at the commencement of this work has brought before the readers of it the most prominent points advanced by him in relation to the "Origin of Species," a prudent course to have adopted, as the theories subsequently propounded can be more readily comprehended and reasoned over.

Ardent in his researches, daring in his speculations, Mr. Darwin is yet very deeply impressed with the importance of a subject that demands great caution and care in the search of truthful data, and which we admit he exercises. "In scientific investigations," he says, "it is permitted to invent any hypothesis; and if it explains various large and independent classes of facts, it rises to the rank of a well-grounded theory." Acting upon the liberty thus conceded, he hazards his conjectures, arrays the formulæ collected, and then proceeds to work out his problems, combining much interesting information with many matters familiar to us.

Mr. Darwin evinces a desire to prove rather than to persuade, as though to ensure, page by page, paragraph by paragraph, a conviction that certain propositions are firmly based; surmises, conceptions, or other approximates towards conviction, as matters of mere opinion having such place and right assigned them, and no more, as their several degrees of importance may demand. Those things he deems obviously decreed by Supreme Wisdom to be concealed from man's comprehension he does not venture rashly to account for; and he certainly treads with measured pace the labyrinths he has entered, with patient zeal searching out those intricacies which he labours to make plain paths to those who will give heed and follow him.

That every living thing on the earth was created originally, as we now behold it, no thinking person can contend. By repeated crosses a variety or a species may be made to differ from or completely to absorb another, while the impracticability of tracing back descent frequently must arise from the extinction of intermediate forms, and thus we behold, as it were, a fresh creation.

"The paramount power, whether applied by man to the formation of domestic breeds, or by nature to the production of species," is termed Selection—man selecting varying individuals, and again selecting their varying offsprings, until he attains his object. All nature is at war, we are reminded; the strongest prevailing ultimately, and the weakest failing, forms in myriads having disappeared from the face of the earth, and a ceaseless struggle for existence recurring again and again through countless ages up to the present.

The preservation of species during this ceaseless battle of life which possess advantages in structure, constitution, or instinct, Mr. Darwin calls "Natural Selection," and he remarks that Mr. Herbert Spencer has well expressed the same idea by "Survival of the Fittest."

It is obvious, as the author says, that although man has no power to alter the absolute conditions of life by changing the climate of a country, or adding a new element to the soil, he can remove an animal

or plant from one climate or soil to another, and difference of temperature and food will then in themselves be sure to lead to mutations. "It is an error," he declares, "to speak of man's tampering with nature and causing variability. If organic beings had not possessed an inherent tendency to vary, man could have done nothing; some naturalists being of opinion that in a state of nature itself species undergo a change."

Mr. Darwin contends that, although man does not (in the strict sense he means), cause variability, being unable even to prevent it, he can select from, preserve, and accumulate the variations given him by the hand of Nature in any way he thinks desirable, improving and altering a breed in accordance with a preconceived idea; and by thus adding up, variations, often so slight as to be imperceptible to an uneducated eye, effect wonderful results. It can also be clearly shown that man, without any intention or thought of improving a breed, by preserving in each successive generation the individuals which he prizes most, and by destroying the worthless, slowly, though surely, induces great changes; and therefore we can understand how it is that domesticated breeds show adaptation to his wants and pleasures.

Even barbarians closely note the qualities of their dogs, Mr. Oldfield stating that several instances have been known amongst the aborigines of Australia of the father killing his own infant, that the mother might suckle the much-prized puppy of the European kangaroo dog.

We were alluding to climate having influence over animals. The Thibet mastiff, when it is brought down from the Himalaya mountains to Kashmir, loses its fine wool. The shepherd-dogs of Angona have fair fleecy hair, the thickness of the fleece being attributed to the severe winters, and the silky lustre to the hot summers. The English bulldog, on the authority of Dr. Falconer, has been known, when first brought into India, to pin down an elephant by its trunk; and yet not only will it fall off, after two or three generations in pluck and ferocity through the enervating climate, but lose the under-hung character of the lower jaw, the muzzle becoming finer and the body lighter, no crossing with native dogs having occurred to account for this deterioration. The Rev. R. Everest obtained a brace of setters, born in India, which perfectly resembled their imported parents. He raised several litters from them in Delhi, taking the most stringent precautions to prevent any crossing; but he was unsuccessful in obtaining a single young dog like the parents in shape or size. Their nostrils were more contracted, their noses more pointed, their size inferior, and their limbs more slender; and yet this was only the second breed.

The sudden degeneracy here mentioned is very extraordinary, for spaniels after eight or nine generations, and without a cross from Europe, are stated by Captain Williamson in his "Oriental Field Sports," to have been as good as their ancestors, Youatt declaring that the setter is evidently the large spaniel improved to his peculiar size and beauty, and taught another way of marking his game (crossed probably, as it may have been, with the pointer to attain that object). Captain Williamson further informs us that hounds are the most rapid in their decline, pointers and greyhounds quickly following them. Indeed, several breeds, it is said not only deteriorate in their forms and faculties, but cannot live in the East.

Extreme cold is equally prejudicial to some animals, neither the Newfoundland dog nor the bloodhound being capable of enduring the intense frigidities of the forests of Northern Europe.

The horse can withstand either intense cold or great heat. It is conceived that "aboriginally" he must have inhabited countries where snow fell heavily, as he long retains the instinct of pawing and scraping it away to get at the grass or other herbage beneath.

The domesticated species of the dog, legion in number, are believed by some naturalists to have their descent from the wolf, from the jackal, or from an unknown and extinct species. Others again holding that they have descended from several species, extinct or recent and more or less commingled together; this it appears being the latest and most popular tenet.

Mr. Darwin himself says that it is highly probable the domestic dogs of the world issued from two good species of wolf (viz., *C. lupus* and *C. latrans*), and from two or three other doubtful species of wolves (namely, the European, Indian, and North African forms), from at least one or two South American canine species, from several races or species of the jackal, and perhaps from one or two more extinct species. "But," he adds, "we shall never be able to ascertain their origin with certainty;" elsewhere remarking that, "with respect to the precise causes and steps by which the several races have come to differ so greatly from each other, we are, as in most cases, profoundly ignorant." It is curious that in the skulls of wolves and jackals, extinct and living, there is a close similarity; thought in the various breeds of the domestic dog a great difference is found. A very important fact which we should, however note, is that the period of gestation with wolves, jackals, dogs, and foxes is about the same.

The main arguments in favour of the several breeds being the descendants of distinct wild stocks is in their resemblance to those distinct species still existing in various countries, though Mr. Darwin cannot admit that the comparisons between the wild and domesticated animal have been generally made with sufficient exactness.

In Florida the black wolf-dog of the Indians differs according to Bartram, in nothing from the wolves of that country except in its attribute of barking. The wild dogs of La Plata resemble wolves and jackals, both of which hunt either singly or in packs, and burrow holes.

Richardson says that the resemblance between the North American wolves and the domestic dogs of the Indians is so great, that the size and strength of the wolf seems to be the only difference. "I have more than once mistaken a band of wolves for the dogs of a party of Indians," he writes; "and the howl of the animals of both species is prolonged so exactly in the same key, that even the practised ear of the Indians fails to discriminate them."

In disposition the Esquimaux dogs differ little from wolves, Dr. Hayes stating that they are capable of no attachment to man, being so ferocious, that they will attack their masters when urged by hunger, and he unhesitatingly pronounces them to be "reclaimed wolves," Kane saying that the Indians take the whelps of the latter to improve the breed of their dogs. He often perceived in his teams of sledge dogs the oblique eye, the drooping tail, and scared look of the wolf. Crossing dogs with wolves to give boldness is a course the savages of

Guiana, as well as the Indians of North America, have adopted. Lord Orford crossed a celebrated greyhound, which failed in courage, with a bulldog; and though after the sixth or seventh generation there was not a vestige of the form of the bulldog left, yet his courage and indomitable perseverance continued.

The English greyhound is supposed to be the descendant, progressively improved, of the large rough Scottish greyhound of the third century, a cross with the Italian greyhound being suspected, but questioned on the score of feebleness in the latter. The greyhound has gained in symmetry and beauty of form what he has lost in strength and stature, speed being the chief requirement sought in lieu of power in hauling down the stately stag, for which he was formerly bred.

Fancy bull-dogs are said to be reduced in size at the present day, bull-baiting having ceased, being assigned as the indirect cause. A connexion between the bull-dog and mastiff is conjectured, the former being the more recent we assume, of the two.

Pointers are dogs of Spanish origin; their very names, as Don, Ponto, Carlos, so usually given them, suggesting it; and yet they are no longer indigenous to the country. The pointer was not known in England before the year 1683, the breed since its introduction having been considerably modified.

The Newfoundland-dog is supposed to have originated from a cross between the Esquimaux-dog and a large French hound.

As we have previously said, breeds have diverged in character, and many old and intermediate sub-breeds have become extinct, the Irish wolf-dog, for example, having disappeared. Mr. Darwin, alluding to the fox-hound, quotes Lawrence, who says that an entirely new animal was raised through the breeders' art, the ears of the southern hound being lessened, the bone and bulk lightened, the waist increased in length, and the stature somewhat added to, a cross with the greyhound having, it is believed, affected this.

Our domesticated quadrupeds are all descended, as far as is known, from species having erect ears; and yet few kinds of these animals can be named, of which one race has not drooping ears, horses in some parts of Russia having them, and dogs in every country almost. Wild animals use their ears like funnels to catch every passing sound, moving them to ascertain the direction whence it comes; and Mr. Blyth is quoted as having remarked that there is not any species now wild with drooping ears, except the elephant. Col. Hamilton Smith says that, "with the exception of one Egyptian instance, no sculpture of the earlier Grecian era produces representations of hounds with completely drooping ears, those with them half-pendulous are missing in the most ancient; and this character increases by degrees in the works of the Roman period."

The drooping of the ears of domesticated animals is thought to arise possibly from disuse; still the ears increase instead of diminishing. Can it be disuse of the tail that causes it to curl? Pigs and dogs have curly tails; but no wild animal known to us has a curly tail. There is, by the way, a tailless race of horses, and horses having hairless tails.

Mr. Darwin looks upon some peculiar characteristics in the dog, though strictly inherited, as monstrosities; the shape of the head and legs of the turnspit, and the under hanging jaw of the bull pug-dog

being adduced. Eccentricities of one sort and another will frequently pass from one generation to another, some of them being very startling. "Some writers, he says, "who have not attended to natural history, have attempted to show that the force of inheritance has been much exaggerated. The breeders of animals would smile at such simplicity; and if they condescended to make any answer, might ask what would be the chance of winning a prize if two inferior animals were paired together? They might ask whether the half-wild Arabs were led by theoretical notions to keep pedigrees of their horses."

The dependence placed by ourselves upon pedigree has surpassed that of every country, and is evidenced in every purchase made where a valuable animal is required, and "hard cash paid down, over and over again," as the author says, "is an excellent test of inherited superiority," let it be a thousand guineas for a bull or three thousand for a horse. "Those who have attended to the subject of selection," says Mr. Darwin, "will admit that nature having given variability, man, if he so chose, could fix five toes to the hinder feet of dogs, as certainly as to the feet of his Dorking fowls; he could probably fix, but with much more difficulty, an additional pair of molar teeth in either jaw in the same way as he has given additional horns to certain breeds of sheep; if he wished to produce a toothless breed of dogs, having the so-called Turkish dog, with its imperfect teeth to work on, he could probably do so, for he has succeeded in making hornless breeds of cattle and sheep;" Lord Somerville, boasting of what breeders have done for sheep, saying, "It would seem as if they had chalked out upon a wall a form perfect in itself, and then had given it existence."

In his book on the "Origin of Species," published a couple of years since, the author quotes Mr. Youatt in support of this theory of selection by man, who says, "It is the magician's wand, by means of which he may summon into life whatever form and mould he pleases;" Sir John Sebright, exemplified in saying, that with his pigeons "he would produce any given feather in three years; but it would take him six to obtain head and beak."

We have rendered a very imperfect transcript from these two volumes, which by their innumerable proofs attest that the great power of the principle of selection is not hypothetical, and that a miraculous creation of the modified forms we behold has not prevailed where subjection to man's requirements has been permitted, while they equally demonstrate Providence beneficently conceding to him a knowledge of the means whereby adaptation to his special wants and wishes shall be ensured, through the variation of animals and plants under domestication.