

32. OBSERVATIONS TENDING TO SHOW THAT THE WOLF, JACKAL, AND DOG, ARE ALL OF THE SAME SPECIES.

THE true distinction between different species of animals must ultimately, as appears to me, be gathered from their incapacity of propagating with each other an offspring capable again of continuing itself by subsequent propagations: thus the horse and ass beget a mule capable of copulation, but incapable of begetting or producing offspring. If it be true that the mule has been known to breed, which must be allowed to be an extraordinary fact, it will by no means be sufficient to determine the horse and ass to be of the same species; indeed, from the copulation of mules being very frequent, and the circumstance of their breeding very rare, I should rather attribute it to a degree of monstrosity in the organs of the mule which conceived, as not being a mixture of two different species, but merely those of either the mare or female ass. This is not so far-fetched an idea, when we consider that some true species produce monsters, which are a mixture of both sexes, and that many animals of distinct sex are incapable of breeding at all. If then we find Nature in its most perfect state deviating from general principles, why may it not happen likewise in the production of mules; so that sometimes a mule shall breed from the circumstance of its being a monster respecting mules?

The time of uterine gestation being the same in all the varieties of every species of animals, it becomes a necessary circumstance towards determining a species.

The affinity between the fox, wolf, jackal, and several varieties of the dog, in their external form and several of their properties, is so striking, that they appear to be only varieties of the same species. The fox would seem to be further removed from the dog than either the jackal or wolf, at least in disposition, being naturally a solitary animal, and neither so sociable respecting its own species or man; from which I should infer that it is only allied to the dog by being of the same genus. It is confidently asserted by many that the fox breeds with the dog; but this has not been accurately ascertained; if it had, the inquiry would probably have been carried further; and once breeding, according to what we have said, does not constitute a species; this, however, is a part I mean to investigate. I do not know if, in a wild state, there ever is in the same country a

by overstrained analogies, as where, in explaining the process of union in a fractured bone, he compares the periosteum to the bark of trees. But the numerous experiments of Duhamel,^a which are characterized by much precision and ingenuity, well merit the attention of the student of Physiology.]

^a [Sur le développement et la crue des os. *Memoires de l'Acad. des Sciences*. Paris, 1742, p. 497; and 1743, p. 187.]

variety in any species of animal, but am inclined to think there never is; if so, as both wolves and foxes inhabited this country, they cannot then be of the same species.

Wolves, as also jackals, are found in herds; and the jackal is so little afraid of the human species, that, like a dog, it comes into houses in search of food, more like a variety of the dog, the consequence of cultivation rather than of chance. It would appear to be much the most familiar of the two; for we shall find that in its readiness to copulate with the dog, and its familiarity with the dog afterwards, it is somewhat different from the wolf; however, this may depend on accident. The wolf being an animal well known in Europe, the part of the world where natural history is particularly cultivated, some pains have been taken to ascertain whether or not it was of the same species with the dog; but I believe it has been hitherto considered as only belonging to the same genus.

Accident often does as much for natural history as premeditated plans, especially when Nature is left to herself. The first instance of the dog and wolf breeding in this country seems to have been about the year 1766. A Pomeranian bitch of Mr. Brookes's, in the New Road, was lined only once by a wolf, and brought forth a litter of nine healthy puppies. The veracity of Mr. Brookes is not to be doubted, respecting the bitch having been lined by a wolf; yet as it was possible she might have been lined by some common dog without his knowledge, the fact was not, in that, clearly made out; but it has since been ascertained that the dog and wolf will breed. One of the above-mentioned litter was presented to me by Mr. Brooks, who likewise informed me that others had been purchased by different noblemen and gentlemen, and named Lord Clanbrassil as having bought a bitch puppy. I reserved mine for the purpose of experiment; and from observation it appeared that its actions were not truly those of a dog, having more quickness of attention to what passed, being more easily startled, as if particularly apprehensive of danger, quicker in transitions from one action to another, being not so ready to the call, and less docile. From these peculiarities it lost its life, having been stoned to death in the streets for a mad dog.

Hearing that Lord Clanbrassil's bitch had bred, Sir Joseph Banks was so obliging as, at my request, to write to his Lordship, who sent the following account:

“ Sir,

“ About seventeen or eighteen years ago, the late Lord Monthermer and I happened to see a dog-wolf at Mr. Brookes's, who deals in animals, and lives in New Road. The animal was remarkably tame, and it struck us, for that reason, that a breed might be procured between him and a bitch.

“ We promised Mr. Brookes a good price for puppies if he succeeded. In about a year a bitch produced nine, and Lord Monthermer bought one; and I had another, which was a bitch. Lord Monthermer's died of fits in about two years: mine lived longer, and

had puppies only once. One I gave to Lord Pembroke, but what became of it I do not remember. It was granddaughter of the wolf by the dam, and got by a large pointer of mine.

"It might be considered that Mr. Brookes's word was not sufficient proof that the puppies were really got by the wolf, but the appearance of the animals, so totally different from all others of the canine species, did not leave a doubt upon our minds; and I remember Hans Stanley, who had adopted Buffon's opinion, was thoroughly convinced upon seeing mine. The animals had the shape of the wolf refined; the fur long, but almost as fine as that of the black fox.

"I am afraid I have trespassed too much upon your time, and will only beg you will be assured nothing can give me more pleasure than any opportunity of assuring you how truly

"I am, sir, &c.

"Jan. 7, 1787.

"CLANBRASSIL."

Upon the supposition that Mr. Brookes's bitch was not lined by a dog, but by the wolf, which I think we have no reason to doubt, the species of the wolf is ascertained; but choosing to trace this matter still further, and hearing that Lord Pembroke's bitch had likewise bred, I was desirous to know the truth of it; and as his lordship was in France I took the liberty of writing to Lord Herbert, and received the following answer:

"Sir,

Wilton House, Dec. 20, 1786.

"The half-bred wolf-bitch you allude to was given, as I always understood, to Lord Pembroke by Lord Clanbrassil. She might, perhaps, have been bought at Brookes's by him. She had four litters, one of ten puppies, by a dog between a mastiff and a bull-dog. One of these was given to Dr. Eyre, at Wells in Somersetshire, and one to Mr. Buckett at Stockbridge. The second litter was of nine puppies, some of which were sent to Ireland, but to whom I know not. This litter was by a different dog, but of the same breed as the first. The third litter was of eight puppies, by a large mastiff. Two of these were, I believe, sent to the present Duke of Queensberry. The fourth litter consisted of seven puppies, two of which were sent to M. Cerjat, a gentleman who now resides at Lausanne in Switzerland, and is famous for breaking dogs remarkably well. These two puppies were, however, naturally so wild and unruly, that he found it impossible to break them.

She died four years ago, and the following inscription was put over the place where she is buried in this garden, by Lord Pembroke's orders:

Here lies Lupa,
whose grandmother was a wolf,
whose father and grandfather were dogs, and whose
mother was half wolf and half dog. She died
on the 16th of October, 1782,
aged 12 years.

"I am sorry it is not in my power to give you any better account; but if you think proper to write to Lord Pembroke, who is at Paris, I am convinced he will be very happy to give you any further information.

"I am, &c.

"HERBERT."

Buffon, whose remarks in natural history are well known, made experiments to ascertain how far the wolf and dog were of the same species, but without success. He says, "A she-wolf, which I kept three years, although shut up very young, and along with a greyhound of the same age, in a spacious yard, could not be brought to agree with it, nor endure it, even when she was in heat. She was the weakest, yet the most mischievous, provoking, attacking, and biting the dog, which at first only defended itself, but at last killed her." And in another part of his work he makes the following observation: "The dog, the wolf, the fox, and the jackall, form a genus, of which the different species are really so nearly allied to each other, and of which the individuals resemble each other so much, particularly by the internal structure and parts of generation, that it is difficult to conceive why they do not breed together."*

This part of natural history lay dormant, till Mr. Gough, who sells birds and has a collection of animals on Holborn-hill, repeated the experiment on a wolf-bitch, which was very tame, and had all the actions of a dog under confinement. A dog is the most proper subject for comparison, as we have opportunities of being acquainted with its disposition and mode of expressing its sensations, which

* In the Supplement to his Works he gives the following account which had been sent to him. "A very young she-wolf, brought up at the Marquis of Spon-tin's, at Namur, had a dog, of nearly the same age, kept with it as a companion. For two years they were at liberty, coming and going about the apartments, the kitchen, the stables, &c., lying under the table, and upon the feet of those who sat round it. They lived in the greatest familiarity.

"The dog was a strong greyhound. The wolf was fed on milk for six months; after that, raw meat was given her, which she preferred to that which was dressed. When she ate no one durst approach her, but at other times people might do as they pleased, provided they did not use her ill. At first she made much of all the dogs which were brought to her, but afterwards she gave the preference to her old companion, and from that time she became very fierce if any strange dog approached her. She was lined for the first time on the 25th of March; this was frequently repeated while her heat continued, which was sixteen days; and she littered the 6th of June, at eight o'clock in the morning; the period of gestation was therefore seventy-three days at the most.^a She brought forth four young ones of a blackish colour, some of whose feet, and a part of the breast, were white; in this respect taking after the dog, which was black and white. From the time she littered she became surly, and set up her back at those who came near her; did not know her masters, and would even have killed the dog if it had been in her power."

^a This is a longer period than in the bitch by at least ten days, but as the account was made from the first time of her being lined, and she was in heat for a fortnight, and lined in that time, it is very probable, if the time was known when she conceived, that it would prove to be the same period as in the dog.

are most distinguishable in the motion of the ears and tail ; such as pricking up the ears when anxious, wishing, or in expectation ; depressing them when supplicant or in fear ; raising the tail in anger or love, depressing it in fear, and moving it laterally in friendship ; and likewise in raising the hair on the back from many affections of the mind. This animal became in heat in the month of December 1785 ; and Mr. Gough having an idea of obtaining a breed from wild animals, as monkies, leopards, &c., he was desirous to have the wolf lined by some dog ; but she would not allow any dog to come near her, probably from being always chained, and not accustomed to be with dogs. She was held, however, while a greyhound dog lined her, and they fastened together exactly like the dog and bitch. While in conjunction she remained pretty quiet, but when at liberty endeavoured to fly at the dog ; yet in this way was twice lined. She conceived, and brought forth four young ones ; and though the time she went with young was not exactly known, it was believed to be the same as in the bitch. Two of these puppies were like the dog in colour, who had large black spots on a white ground ; another was of a black colour ; the fourth of a kind of dun, and would probably have been like the mother.* She took great care of them, yet did not seem very anxious when one was taken from her by the keeper ; nor did she seem afraid when strangers came into the room. Unfortunately these experiments were carried no further : one of the puppies being sold to a gentleman, who carried it to the East Indies ; and the other three, one of which I was to have had, were killed by a leopard. The same wolf was in heat in December 1786, and was lined several times by a dog. She pupped on the 24th of February 1787, and had six puppies, one of which, a bitch, I had, and kept it till it was in heat ; but missed the opportunity of having her lined. That loss, however, was made up by a wolf-bitch belonging to James Symmons, Esq., of Grosvenor-house, Milbank : the history of which is as follows :

This female wolf had been in his possession some time, had been lined by a dog, and brought forth several puppies, which I saw in company with Sir Joseph Banks, soon after Mr. Gough's wolf, the subject of my former paper, had produced her litter ; so that these puppies were nearly of the same age with mine. Mr. Symmons reared them all ; but one only was a female, which more resembled the mother or wolf kind than any of the others. I communicated

* [Here it may be observed, that, from the known disposition of varieties to revert to the original, it might have been expected, on the supposition that the wolf is the original of the dog, that the produce of the wolf and dog ought rather to have resembled the supposed original than the variety. In a litter lately obtained, in the Royal Menagerie at Berlin, from a white pointer and a she-wolf, two of the cubs resembled the common wolf-dog, but the third was like a pointer with hanging ears.^a]

^a [Lyell, *Principles of Geology*, vol. ii., p. 438, who cites Wiegmann for this fact.]

to Mr. Symmons my wish that we should endeavour to prove the fact of the wolf and dog being of the same species, by having either his female or mine lined by a dog. This he very readily acceded to; and his bitch received the dog on the 16th, 17th, and 18th of December, 1788; and the 18th of February following she brought forth eight puppies, all of which she reared.

If we reckon from the 16th of December, she went sixty-four days; but if we reckon from the 17th, the mean time, then it is sixty-three days, the usual time for a bitch to go with pup. These puppies are the second remove from the wolf and dog, and similar to that given by my Lord Clanbrassil to the Earl of Pembroke, which likewise bred again. (See Philosophical Transactions, vol. lxxvii., p. 255.) It would have equally proved the same fact if she had been lined either by a wolf, a dog, or one of the males of her own litter.*

It is remarkable that there seems to be only one time in the year in which impregnation is natural to the wolf, which is the month of December: for Mr. Gough's wolf has always been in heat in that month; so was that of Mr. Simmons. The time of heat in his of the half-breed (which is nearly of the same age with mine) corresponded likewise with that of the mother, and of those bred from Mr. Gough's wolf.

OF THE JACKAL.

This animal being so nearly allied to the dog, and only found wild like the wolf, I became desirous of ascertaining of what particular species it was; and while pursuing the subject, I was informed that Captain Mears, of the Royal Bishop, East Indiaman, had brought home a bitch-jackal with young, which brought forth soon after his arrival; and that he had given the bitch-jackal and one puppy to Mr. Bailey, bird-merchant, in Piccadilly. I went to see them, and purchased the puppy, the subject of the following experiment, which we found to have dispositions very similar to those of the half-bred wolf before-mentioned, which I had from Mr. Brookes.

* [This assertion, that the fertility of a hybrid with an individual of a pure breed proves the fact of identity of two supposed distinct species equally with the production of offspring from the connection of hybrid with hybrid, cannot be admitted. To prove the identity of two supposed distinct species, granting that the fertility of the hybrids from the two to be the proof required, it should be shown that such hybrids are fertile *inter se*, and capable of propagating indefinitely an intermediate variety. Now this is precisely the fact which is wanting in the evidence adduced in the text. All that Hunter proves is that two species very nearly allied to each other will produce a hybrid offspring, and that the hybrid is again productive with an individual of the pure breed; but this only illustrates a general law by which the reversion of the hybrid to the pure breed is provided for; while, on the other hand, the intermixture of the distinct species is guarded against by the aversion of the individuals composing them to sexual union: an aversion which we see in the case of Mr. Gough's female wolf to have been only overcome by force.]

To have a true history of this animal, I took the liberty of writing to Mr. Mears, who politely called upon me, and, at my request, sent me the particulars in a letter, of which the following is a copy :

“ Sir,

“ I had the honour of yours of the 15th instant ; and with regard to the female-jackal, I can assure you that she took a small spaniel dog of mine on board my ship, the *Royal Bishop*. I had her, when a cub, at Bombay ; and a very short time before I arrived in England she got to heat, and enticed this small dog into the long-boat, where I saw them repeatedly fast together. I brought her to my house in the country, where she pupped six puppies, one of which you have seen. Mr. Plaw, at No. 90, Tottenham-court Road, has a dog-puppy, which will be at your service at any time you chuse to send for him, to make further experiments : I called on Mr. Plaw, and got his promise to let you have the dog.

“ I have the honour to be, sir, &c.

“ W^M. MEARS.

“ No. 107, Hatton-street, 16th Jan. 1786.

“ P.S. I had the bitch on board fourteen months.”

Having taken this puppy into the country, and chained it up near a mastiff-dog, they became very familiar, and seemingly fond of each other. When the bitch became first in heat I could not get a proper dog : but about the latter end of September, she being again in the same state, several dogs were procured and left with her.— They appeared indifferent about her, probably from being in a strange place ; nor did she seem inclined to be familiar with them. One of them was a large dog, which might not perhaps be able to line her ; but she was twice tied by a terrier on the 3d of October. In a few weeks she was evidently bigger ; and on the 30th of November, in all fifty-nine days, brought forth five puppies. A few days before this period she dug a hole in the ground, by the side of her kennel, in which she littered ; and it was some time before she would allow the puppies to stay in the kennel when put there. Some of these began to open their eyelids in about eight, others of them in nine days.

Here then being an absolute proof of the jackal being a dog, and the wolf being equally made out to be of the same species, it now therefore becomes a question whether the wolf is from the jackal, or the jackal from the wolf (supposing them but one origin) ? From the supposition that varieties become more tame in their nature than the originals, we should be led to believe the wolf to be the original, and that the jackal was a step towards civilization in that species of animal, and that therefore the jackal should be considered as a variety of the wolf. There are wolves of various kinds, each country having a kind peculiar to itself ; but the jackals that I have seen have been more uniform in resemblance to each other, probably because only to be found in one country, the East Indies. I am informed, however, that they vary in size. Whether the wolves

of different countries are of one species, or some of them only of the same genus, I do not know; but I should rather suppose them to be all of one species. An argument with me in favour of this supposition is, that if there were wolves of distinct species, we should have had by this time a great variety of every species of wolf, with the various dispositions arising from variation in other respects; and those varieties would now have been turned to very useful purposes, as in the case of the dog: for all the wolves we are yet acquainted with should have naturally the principle of cultivation in them (as much probably as any animal), as much at least as those wolves we now know by the name of dogs. The not having a civilized species with all the characteristics of the wolf is, indeed, with me a proof that they are all of the same species with the dog. If they are all of the same species with the dog, then the first variety that took place would be still in the character of a wolf, differing only in colour or some trivial circumstance, which could only arise from a difference in climate. The wolf is naturally, I believe, the inhabitant of cold climates, and little variety could take place while it remained in such a situation; but if the jackal was originally a wolf, which had strayed by accident more to the southward, a greater variation from the genuine character might be produced, the difference of climate, and perhaps of food, becoming causes of variety. By continuing to inhabit a warm climate, this circumstance would in time lose part of its influence on the animal, and the jackal would admit of little more variety. This, however, is a point not now to be determined, it being difficult (perhaps impossible) to say where the wolf became jackal, or (what we call) dog; and, as dogs differ much from one another, what particular dog may be considered as the first remove; or whether the jackal is the intermediate link connecting the wolf and dog. In any case we may reckon three great varieties in this species, wolf, jackal, and dog; which again branch into their respective less obvious varieties. If the dog proves to be the wolf tamed, the jackal may probably be the dog returned to its wild state; which leads to another curious question: Whether, as animals vary from climate, cultivation, or what may be called differences in mode of living, they would return to their genuine character if allowed to go wild again in the original country?

To ascertain the original animal of a species, all the varieties of that species should be examined, to see how far they have the character of the genus, and what resemblance they bear to the other species of the genus; for it is natural to suppose that the original animal, or that which is nearest to it, will have more of the true character of the genus, and a stronger resemblance to the species nearest allied to it, than any of the other varieties of its own species.

If we apply this to the dog, and consider the fox as a distinct species, which there is great reason to believe it is, that variety which has the greatest resemblance to the fox is to be looked upon as the original of all the others: which will prove to be the wolf.

Another mode of considering this subject, which is, however, secondary to the above, is by supposing that all animals were at first wild; and therefore that those animals which remain wild are the original stock; and that when we find animals far removed from their originals in appearance the variation takes place in consequence of cultivation, yet so that we can still trace the gradation. What gives some force to this idea is, that where the dogs have been least cultivated, there they still retain most of their original character, or similarity to the wolf or the jackal, both in shape and disposition. The shepherd's dog, all over the world, has strongly the character of the wolf or jackal; so that but little difference is to be observed, except in size and hair. That of size may perhaps take place under a variety of circumstances; but difference in hair is in general, although not always, influenced by climate. Thus the wolf has longer and softer hair than the jackal, because a more northern animal; while the jackal of the East, and the shepherd's dog in Portugal and Spain, have shorter and stronger hair than those of Germany or Kamtschatka, from inhabiting warmer climates. But when we consider their general shape, the character of countenance, the quick manner, with the pricked and erect ears, we must suppose them varieties of the same species. The smelling at the tail has been mentioned as characteristic of the dog; but I believe it is common to most animals, and only marks the male, for it is the most certain way the male has of knowing the female, and by another scent discovering whether the female is disposed to receive the male, which is perhaps the final intention.

The Esquimaux dog, and that found among the Indians as far south as the Cherokees, the shepherd's dog in Germany, called Pomeranian, the shepherd's dog in Portugal and Spain, have all a strong similarity to the wolf and jackal.

Buffon, on the origin of dogs, seems to have had nearly the same idea: for he says the shepherd's dog is the original stock from which the different kinds of dog have sprung.

As the wolf turns out to be a dog, it seems astonishing that there was no account of dogs being found in America. But this I consider as a defect in the first history of that country, as there are wolves; and I must think, in spite of all that has been said to the contrary, that the Esquimaux and Indian dog is only a variety from a wolf of that country which had been tamed. Mr. Cameron, of Titchfield-street, who was many years among the Cherokees, and considerably to the westward of that country, observes that the dog found there much resembles the wolf, and that the natives consider it to be a species of tame wolf; but as we come more among the Europeans who have settled there, the dogs are more of a mixed breed. Why the Cherokees should have had only this kind of dog transported among them, while every other part of America has the varieties of Europe, is not easily solved.

The voice of animals is commonly characteristic of the species; but I should suppose it to be only characteristic of the original spe-

cies, and not always of the variety, and the supposition holds good in the dog species. Dogs may be said to have a natural voice and a variation, arising either from a variety having taken place in the species, or a kind of imitation. It would appear that the voice of the wolf and the jackal is very similar, being the natural voice, and is principally conveyed through the nose, and exactly resembling that noise in dogs which is a mark of longing or melancholy and also of fondness, but having no resemblance to the bark of the dog, which they do not perform. However, in catching a jackal, when the animal found it could not escape, it yelped like the dog, which is a kind of barking, and which is probably the natural sound. Barking is peculiar to certain varieties of the dog kind, and even of those that bark some do it less than others: the dogs in the South Sea Islands do not bark, our greyhound barks but little, while the mastiff and many of the smaller tribe, as spaniels, are particularly noisy in this way. There is reason to believe that the frequency of this noise may arise from imitation: for the dogs in the South Sea Islands learn to bark, the half-breed jackal barked, and so did the half-breed wolf, although but little; and others, as the hound, have a peculiar howl, by huntsmen called the tongue, which noise, and the barking also, are both made by opening the mouth. A variety in the voice, or some parts of the voice, in varieties of the same species, is not peculiar to the dog.

It is a curious circumstance that variety not only takes place in colour and form, from the change of habits in the parents, but that the dispositions are also changed; and that the dispositions are most commonly changed in such a way as appears best adapted to the form of the animal. The change in the habits of the parent animal arise principally from its connection with the human kind, which has now succeeded in training dogs so as to fit them, both in body and mind, for almost every purpose of human Œconomy, as if man himself had formed them expressly with such intention, while at the same time he can only be considered as an occasional cause, for we may observe that all the males of the wolf kind are nearly the same, and so are likewise those of the jackal, having little or no variety in their dispositions. Those of the half-breed, and even those that are three removes, although tame, yet have not the docility of dogs, nor are they so immediately at the command of the human will; neither are they perfectly satisfied with an artificial life, having when left to themselves a propensity to fall back into their original instinctive principles.*

* [The range of deviation from the original type appears to be greater in the dog than in any other known species. Besides the well known and considerable differences in the quantity, colour, and texture of the hair, and in the size, form, and proportions of the body, in some individuals an additional false grinder appears; and there is a race of dogs which have a supernumerary toe on the hind-foot, with the corresponding tarsal bones;^a—a variety analogous to the Dorking (or five-toed) fowl, and to the six-fingered families of the human race.]

^a [Cuv. Disc. Prélim. Ossem. Fossiles, Ed. iv. tom. i., p. 205.]

The following account from Mr. Jenner, of Berkeley, to whom I gave a second remove, viz., three parts dog, is very descriptive of this propensity :

“The little jackal-bitch you gave me is grown a fine handsome animal; but she certainly does not possess the understanding of common dogs. She is easily lost when I take her out, and is quite inattentive to a whistle. She is more shy than a dog, and starts frequently when a quick motion is made before her. Of her inches she is uncommonly fleet, much more so than any dog I ever saw. She can turn a rabbit in the field; she is fond of stealing away and lying about the adjacent meadows, where her favourite amusement is hunting the field-mouse, which she catches in a particular manner.”

As animals are known to produce young which are different from themselves in colour, form, and dispositions, arising from what may be called the unnatural mode of life, it shows this curious power of accommodation in the animal œconomy, that although education can produce no change in the colour, form, or disposition of the animal, yet it is capable of producing a principle which becomes so natural to the animal that it shall beget young different in colour* and form, and so altered in disposition as to be more easily trained up to the offices in which they have been usually employed, and having these dispositions suitable to such change of form.

It also becomes a question, whether they would not go back again to their original state, if put into the situation of the original from whence they sprang; or acquire a form resembling the original of that country where they are placed. I do not conceive that they must necessarily go back through the same changes; but I have some reason to suppose they would gradually return to a resemblance of that original.† And it would be difficult to prove whether, in many of the gradations, they are progressive or retrograde. But this is a subject that requires particular attention and investigation, and upon which, I hope, some time or other, to be able to throw more light.

* [This has recently been exemplified in the produce of a male and female Dingo, or wild dog of Australia, brought forth at the Zoological Gardens, and under circumstances which precluded the possibility of connection between the female and any other dog than the male with which she was kept confined. Two, out of the litter of five puppies brought forth, had the uniform red-brown colour of the parents, the rest were more or less pied, brown and white.]

† [If the wolf were actually the original of the dog, it might have been expected that the Dingo of Australia, supposing it to have originated from some dog accidentally introduced into that continent, would have been found reverted to its original condition, or as a wolf. But there appears to have been no further progress towards the acquisition of the characters of the wolf, in this instance, than may be supposed, on the theory of reversion, to have taken place in the time of Cook. The existence of wild dogs which are not wolves, as the Dingo of Australia and the Dhole of India, which have either lost or have never acquired the common character of domestication, variety of colour, is itself a strong argument against the original of the domestic dog ever having been a wolf.]