Reviews.

The Descent of Man and Selection in Relation to Sex. By Charles Darwin, M.A., F.R.S., &c. Two Vols. John Murray.

On the Genesis of Species. By St. George Mivart, F.R.S. Macmillan.

Essays on Darwinism. By Thomas R. R. Stebbing, M.A., late Fellow and Tutor of Worcester College, Oxford. Longmans.

When Mr. Darwin first astonished the world by the publication of his theory of the Origin of Species by Natural Selection, he confined his illustrations to the inferior forms of the organic creation. Plants, insects, fishes, reptiles, birds, and beasts, were all clearly intended to be covered by the theory. But nothing was said distinctly about the crowning species of creation—Man. It was plain, indeed, that the theory, to be consistent, must include him in its sweep, unless some special obstacle intervened to exempt him from it. For its tendency was absolutely universal. A theory which professed to explain how all the manifold forms of life rose one out of another by an orderly and gentle progression, till the whole surface of the land, the depths of the waters, and the abysses of the air were all peopled by their fitting inhabitants,—harmoniously adjusted each to its respective conditions,—was manifestly imperfect, if it stopped short abruptly on the threshold of the highest species of all, and invoked a new law for the introduction of mankind upon the scene. Yet there were many considerations which might well occasion some hesitation in this application of the theory. There were great and obvious differences between Man and all beneath him, which might be supposed to justify the idea that his creation was a thing apart and separate, distinct from that of all the lower forms of life. And Mr. Darwin's silence on the subject seemed to favour the idea that he himself felt the force of these considerations, and shrank in the face of them from pushing his theory to its legitimate issue. But it was a subject which he could not help discussing sooner or later, and the years which have intervened since the earlier work have been sufficient to ripen his thoughts to a very distinct conclusion. Man, he tells us now, is no exception to the general law. The same causes which have produced other creatures have been sufficient to produce him also. He is only the final step in the long series of gradations which stretch backwards to the earliest and simplest forms of life. He can trace his line by direct ancestry through ape-like, kangaroo-like, and lizard-like progenitors, to an almost shapeless molluscoid. Out of many passages which give this history in various forms and illustrations, we select this clear and brief summary:—

> By considering the embryological structure of man,—the homologies which he presents with the lower animals,—the rudiments which he retains,—and the reversions to which he is liable, we can partly recall in imagination the former condition of our early progenitors; and can approximately place them in their proper position in the zoological series. We thus learn that man is 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 its whole structure had been examined by a naturalist, would have been classed amongst the Quadrumana, as surely as would the common and still more ancient progenitor of the Old and New World monkeys. The Quadrumana and all the higher mammals are probably derived from an ancient marsupial 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 the early progenitor of all the Vertebrata must have been an aquatic animal, provided with branchiæ, 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 larva of our existing marine ascidians than any other known form.

That is a very clear statement of the genealogy of Man, and the object of these two volumes is to justify it. They do not, except casually, go over the old ground again. They assume the truth of the theory of the origin of species by natural selection for the rest of the organic world, and are only occupied with the proof that Man is no exception to the general law. This, it will be seen, gives a kind of vantage ground to the argument. If all other species have been developed one from another by a natural law, there is an *à priori* probability that the human species has followed the same rule. Any one who has accepted the general theory, but excepts Man from its operation, is bound to show cause why he does so. The burden of proof in this case is shifted from the original propounder to the objector. But it is a burden which the objectors would not generally decline. Man seems to them so different from the lower animals that there is nothing strange or inharmonious in the mode of his production being altogether different also. This presumption Mr. Darwin accordingly sets himself to meet by showing that there is no such impassable difference between them. He argues that the line of development of the lower creatures leads naturally up to Man, and that Man shows, both in his bodily and mental structure, the traces of the forms through which he has passed.

In the case of the body the task is comparatively easy. Homology is the first argument for a common descent. Why should the skeletons of all vertebrate creatures be so curiously uniform in their general structure, while they are so infinitely diversified in the uses and adaptations of their several parts, if they did not all spring from some common origin? "On any other view the similarity of pattern between the hand of a man or monkey, the foot of a horse, the flipper of a seal, the wing of a bat, &c., is utterly inexplicable." To say that they are formed on the same ideal plan is, as Mr. Darwin observes, no scientific explanation. It is merely the reassertion of the same proposition under another form of words. The identity of the embryo of all animals in its earliest stage and its gradual differentiation as time advances is a second argument:—

> Man is developed from an ovule about the 125th of an inch in diameter, which differs in no respect from the ovules of other animals. The embryo itself at a very early period can hardly be distinguished from that of other members of the vertebrate kingdom.

"Rudimentary organs" constitute a third argument. The *os coccyx* is the most familiar instance of this. It represents in Man that which in other animals is lengthened out into a tail. But Mr. Darwin produces less familiar instances of the same thing. Remnants of the *panniculus carnosus*—the muscle by which horses and other animals are enabled to twitch their skin—are found in various parts of our bodies; and some exceptional individuals are still able to use them. Men exist who can pitch heavy books from their head by the movement of the scalp alone. Others may be found who can draw their ears backwards or forwards like a horse. Indeed, the whole external shell of the ear is considered by Mr. Darwin to fall under the category of a rudiment. Its various folds and prominences strengthen and support the erect and moveable ear of the lower animals, but appear to be quite useless to Man. The short straggling hairs or the fine down which cover a great part of the human body are in the same way "the rudiments of the uniform hairy coat of the lower animals." The sense of smell, of little use to man, but highly serviceable to other creatures, both in finding their prey and in escaping danger, is another legacy which he inherits from them, enfeebled in his own case by disuse.

These are instances of the kind of argument by which Mr. Darwin endeavours to establish the development of the human body out of the lower forms of life. They are undoubtedly strong, and he is perhaps justified in saying of them that "to take any other view" than that of community of descent "is to admit that our own structure, and that of all the animals around us, is a mere snare laid to entrap our judgment." But the human Mind presents, even in Mr. Darwin's own judgment, far greater difficulties. The far-reaching intellect, the marvellous faculty of language, the moral and spiritual perceptions implied in conscience and religion—these are things which seem, at a glance, impossible to be derived by any law of inheritance from anything that we see in the brute creation. But if the theory of evolution is to hold good for Man, Mr. Darwin is bound to prove that they can be so derived, and he accordingly addresses himself to the task. He does this by endeavouring to show that these great qualities are not absolutely new and unprecedented in Man; but that they may be traced in an incipient form in the lower animals, and that we can find in these the germs and seeds which, through a long process of natural selection governing the ordinary laws of inheritance, have developed in Man into such a stately and noble growth. In the case of the pure intellect our readers will readily supply the course of the argument. They are familiar with stories of the cleverness of dogs and monkeys, of ants and beavers, and will understand at once how these can be employed by a skilful dialectician to furnish a foundation for the development of human reason. But whence came human Language? Inarticulate expressions of pain or pleasure, fear or fondness or alarm, are, of course, to be met with far down in the scale in yelps and roars and purrings; but how did these grow into Speech? The answer to this introduces us to a subject which Mr. Darwin has developed here for the first time, and which occupies fully three-quarters of the entire space of these two volumes. This new topic is that of Sexual Selection. It is a power which supplements Natural Selection by doing a great deal which this latter cannot do. It favours and encourages variations which Natural Selection has no tendency whatever to perpetuate. For not only are those variations preserved which confer on the possessor a superiority in the struggle for existence—which alone is the office of Natural Selection,—but those also are maintained which confer on their fortunate possessor an advantage in courtship. The female, according to Mr. Darwin, has always to be wooed before she is won, and the male who has most attractions will come off best in the general rivalry. Hence springs the beautiful plumage of many male birds; hence flows the sweetness of their song; and out of song comes Speech. Speech, therefore, is more largely the product of Sexual than of Natural Selection, though it is indebted in some degree to this latter also. Wherever danger-signals were more distinct, or call-notes more intelligible, there it is plain that some advantage would arise; and these might very possibly be improved by the imitation of other sounds:—

> As monkeys certainly understand much that is said to them by Man, and as in a state of nature they utter signal-cries of danger to their fellows, it does not appear altogether incredible that some unusually wise ape-like animal should have thought of imitating the growl of a beast of prey, so as to indicate to his fellow-monkeys the nature of the danger.

It will be seen from this that Mr. Darwin is a partisan of the "bow-wow theory" of language. Indeed, after stating that he has read the writers on both sides, he deliberately sides with Mr. Farrar against Professor Max Müller, and gives in his formal adhesion to the view that "language owes its origin to the imitation and modification, aided by signs and gestures, of various natural sounds, the voices of other animals, and Man's own instinctive cries."

But Conscience presents a difficulty at least as great as Language. Whence come the conceptions of Right and Wrong, of moral approbation and censure, and the sense of obligation imposed by Duty? Are any germs of these traceable in the lower animals? And if they are, can we imagine any process of events by which these germs may have been ripened into the mature and overmastering convictions of a high morality? Mr. Darwin thinks he can do this, and he has elaborated for the purpose a theory of the Moral Sense which, if not adequate, is certainly ingenious. It takes its rise, he thinks, in the gregarious instincts. These, we know, exist strongly in many classes of animals, inducing them to herd together; and it is easy to see that, by strengthening the inclination to mutual assistance, and encouraging the division of labour which sets some, for instance, to act as sentries while others feed or build, these instincts will confer considerable advantage on their possessors, and will therefore, on the principles of Natural Selection be likely to grow and develop. And it is a notable distinction of these instincts that they are *persistent*. Other appetites, such as those of hunger, love, and conflict, come and go. They vanish entirely in their gratification, and only spring up again gradually as the gratification recedes into the past. While they exist they are vehement, and will often overpower the less ardent social affections, which have accordingly to give way before them. Once gratified, however, they cease for the moment to exist, and the more permanent social affection resumes its steady sway. But it resumes it with a sense of injury. It has been overborne and violated. Its enemy is for the moment dead, and can no longer plead its own cause. The social instinct remains in sole possession of the ground, and there is nothing to counterbalance the disquietude which always arises, when an instinct is thwarted or disappointed. That disquietude is what we call Remorse: and if it does not exist in the lower animals, it is only, according to Mr. Darwin, because they have not yet reached the mental activity which reproduces past impressions vividly in the present, and forces a comparison between the weak impression of past hunger and the strong feeling of present sympathy. His meaning will be made clearer by the following striking illustration taken from the habits of the Swallow:—

> Whilst the mother-bird is feeding or brooding over her nestlings, the maternal instinct is probably stronger than the migratory; but the instinct which is more persistent gains the victory, and at last, at a moment when her young ones are not in sight, she takes flight and deserts them. When arrived at the end of her long journey, and the migratory instinct ceases to act, what an agony of remorse each bird would feel, if, from being endowed with great mental activity, she could not prevent the image continually passing before her mind of her young ones perishing in the bleak north from cold and hunger.

This conflict of strong though transitory, with weak though persistent instincts, is one which may clearly take place in the lower animals. You have but to raise it to its highest pitch by intensifying and refining the social affections, while you impose on the active intellect the necessity of perpetually reproducing and comparing past impressions, and you will have as a result the Moral Sense in Man. It costs little to add on to this the Religious Sentiment, for this needs only the belief in a Superior Being. The moral emotions, once raised, will necessarily fasten on this Being in a high degree, and the conduct of the lower animals towards Man will suggest ready analogies for this—

> The feeling of religious devotion is a highly complex one, consisting of love, complete submission to an exalted and mysterious superior, a strong sense of dependence, fear, reverence, gratitude, hope for the future, and perhaps other elements. No being could experience so complex an emotion until advanced in his intellectual and moral faculties to at least a moderately high level. Nevertheless, we see some distant approach to this state of mind in the deep love of a dog for his master, associated with complete submission, some fear, and perhaps other feelings. The behaviour of a dog to his master after an absence, and, as I may add, of a monkey to his beloved keeper, is widely different from that towards their fellows. In the latter case the transports of joy appear to be somewhat less, and the sense of equality is shown in every action. Professor Braubrach goes so far as to maintain that a dog looks on his master as a god.

These are the methods by which Mr. Darwin endeavours to remove or lessen the general difficulties which lie in the way of his theory of the Descent of Man. They will not, as we think, go far in this direction. For the conflict of two appetites gives after all no clue to the sense of Obligation which is the distinguishing element of Conscience. The gap between song and mere imitative sounds on the one hand, and articulate and significant speech on the other, remains still enormous. The faculty of abstraction in Man transcends immensely any resemblance of it which has been alleged in the brutes. And the new machinery of Sexual Selection has a strain put upon it, which can scarcely be supported by the facts adduced, curious and interesting as these are. For it requires us to credit the lower animals with a faculty of æsthetic perception which has never hitherto been dreamed of. In birds especially this is carried to an incredible pitch. If the humming bird acquired its hues of sapphire and ruby, and the Argus pheasant its exquisitely shaded spots, simply to please and allure their mates, it would follow that the average females of these species must possess a refined appreciation of beauty in form and colour such as is only to be met with in mankind in a few highly cultivated individuals among the most advanced races of Europe.

Moreover, besides these general considerations, there are also some special difficulties which our readers will expect to see noticed in these columns. They will remember a remarkable essay from Mr. Wallace a year ago, in which he pointed out the impossibility of the production of the smooth skin of Man by the unaided process of Natural Selection, and the difficulty suggested by the apparent development of the brain, voice, ear and hand of Man in advance of his actual needs or uses, instead of—as the theory requires—in consequence of them. Mr. Darwin gives up the former point at once. "No one supposes," he says, "that the nakedness of the skin is any direct advantage to Man, so that his body cannot have been divested of hair through natural selection." But he claims it instead as the result of Sexual Selection. It is a "secondary sexual character,"—that is to say, "in all parts of the world women are less hairy than men:" and hence he argues that among the early progenitors of the race "smooth skin in the female" was an object of attraction to the male, and thus by the laws of inheritance was transmitted with increasing force in each generation, but in unequal degrees, to the offspring of both sexes.

But to the other argument, which we may call that of anticipatory development, he altogether demurs. The human brain, he thinks, does not exceed the brain of apes in any greater degree than the reason of Man exceeds that of the gorilla. "Man," he says, "in the rudest state in which he now exists, is the most dominant animal that has ever appeared on the earth." He then enumerates the various acquisitions of the savage in tools, fire, language, which are "the direct result of the development of his powers of observation, memory, curiosity, imagination, reason," and adds—"I cannot therefore understand how it is that Mr. Wallace maintains that natural selection could only have endowed the savage with a brain a little superior to that of an ape." This, however, is rather a cursory dismissal of an argument which deserves more attention. Mr. Wallace had instituted a careful comparison between the gorilla, the savage, and the philosopher, and arrived at the conclusion that the mental activity did not grow *pari passu* with the size of the brain, and that the gap between the first and second was smaller in mental development, but larger in size of brain than that between the second and third. Mr. Darwin ought to have met this argument more distinctly; nor do his remarks seem to us conclusive in regard to the early perfection of the hand and the vocal organs. It is surely a strong thing to say that the hand could have gained its exquisite development by practice in throwing stones or chipping flints, or that the capacity for the finest modulations of voice could have been won by the efforts needed to transform the inarticulate song of courtship into the rude harsh syllables of a savage.

These are the answers which Mr. Darwin makes to special objections. What degree of weight they have is a matter on which judgments will vary, though few, we should think, would regard them as conclusive. But the theory itself is now complete. The formal inclusion of Man within its limits has left nothing more to be done in this respect. The haziness and uncertainty that long hung around its boundaries are removed. It stands before us clearly and distinctly as a theory which professes to account for the whole organic creation. It offers an explanation of the way in which all the varied forms of life, from the lowest to the very highest, may have been developed from a very few original germs, or perhaps even from one. Such a theory cannot possibly be relegated entirely to the domains of pure science. It touches too closely on other spheres of thought;—it wakes too many questions of deep and universal interest to be allowed to keep itself thus absolutely secluded. It cannot help rousing the attention of Philosophy and Religion, and compelling them to ask—What is the bearing of this theory upon us? How does it affect the principles and conclusions which have hitherto passed current under our authority? It suggests the question—Is there any reason why a sound metaphysician or a good moralist should reject it at once and without examination? Or—and this will be felt by all our readers at least to be far more important—what ought a Christian to think and feel and say about this theory?

These are serious questions, far too large to be adequately discussed within our present limits; but a few general considerations which may help towards their answer seem to be worth stating.

First of all, then, it is obvious to observe that the theory is by no means proved. It has a good deal to say for itself. It accounts for much. It has perhaps more probability than any other theory of the origin of species which has yet been intelligibly propounded. It brings from different quarters a number of converging arguments which mutually strengthen one another. But all this is very far short of the proof which is demanded for every scientific theory before it can claim and receive general acceptance. The utmost that can be said at present for the theory of Natural Selection is that it is on the way towards being proved. But the way is long, and it may never reach the goal. Indeed we may go further, and say that it seems unlikely that it ever will. The nature of the argument is such—depending as it does upon inductions covering such vast and almost illimitable areas of space and time—that it scarcely admits of the possibility of proof. However wide the sweep of observation may extend, the region still unexplored and unexhausted will be always felt to be immense enough to cover any undreamed of chances of surprise and contradiction. Still, if every fresh investigation invariably brought an accession of strength and not a source of weakness to the theory, these chances would be in a process of continual reduction, and the proof would be as high as the nature of the subject admitted. This, however, is far from being the case. The theory has been now ten years before the world, and—so far as it professes to be a complete account of the development of organic life—it has lost rather than gained ground in the estimation of the most competent judges. That is to say, while the existence of Natural Selection as a great and potent force in the world is universally admitted, and Mr. Darwin's exceeding ingenuity and perseverance in tracing its action in many ways have met with the admiration they deserve, there is a growing conviction that it is quite inadequate to do all the work which Mr. Darwin originally claimed for it. We have already referred to the difficulties which Mr. Wallace has pointed out, and which, as it seems to us, Mr. Darwin fails to answer satisfactorily. But any one who wishes to appreciate this side of the question should read the admirable volume by Mr. St. George Mivart, whose title we have placed at the head of our article. Mr. Mivart is a Fellow of the Royal Society, not infrequently quoted by Mr. Darwin himself, and quite able to discuss with full knowledge the zoological details which are involved in every stage of the argument. He gives due honour to Mr. Darwin and ample weight to the important principle which he has enunciated; but he thinks that principle quite insufficient to accomplish all that has been assigned to it. His arguments are subtle and minute; we can only indicate here a few of the more prominent. The "incipient stage" of variation presents a great difficulty. All variations on the theory of Natural Selection, are bound to be at once small and useful. But in many cases, it is not easy to see how

© Reproduced with the permission of Cambridge University Library

the first small variations would be in the least useful. Mimicry is a case in point. A butterfly that imitates a species distasteful to birds is safe by that imitation, when it is complete; but the first slight tendency in that direction would deceive no bird, would be of no use to the possessor, and would therefore not have the smallest tendency to be perpetuated or improved. The same may be said of the last finishing touches, which often bring up the resemblance to a wonderful height of perfection. It would be sufficient without these for purposes of protection: why should these be added? Again, any *single* individual with a peculiarity of structure could never perpetuate its peculiarity amidst a multitude of unlike forms. It would be certain to be eliminated by the mere force of numbers. For a variation to prevail to the exclusion or subordination of the original type, it must not only be useful, but it must also appear simultaneously in a considerable number of individuals; and this, on Mr. Darwin's view, according to which the first appearance of any variation is entirely fortuitous, is an occurrence against which there are many chances. The want of links between different forms, where such links might fairly be expected, is another argument. Making all allowance for the admitted imperfection of the geological record, yet still, to quote Mr. Mivart's own words, "had such a slow mode of origin, as Darwinians contend for, operated exclusively in all cases, it is absolutely incredible that birds, bats, and pterodactyles should have left the remains they have, and yet not a single relic be preserved in any one instance of any of these different forms of wing in their incipient and relatively imperfect functional condition." The famous argument of Sir William Thomson, the present President of the British Association, limiting on astronomical grounds the past duration of the earth under anything like its present conditions to some such period as one hundred million years, is another well-known objection to the theory in its original form, which required an almost infinite time for the free development of almost infinitely minute variations. This last argument has never been refuted on its own grounds—perhaps because very few have the requisite knowledge for appreciating it: but some Darwinians, such as Mr. Wallace, have shown an inclination to accept Sir W. Thomson's statement, and to reduce their theory within its limits by allowing in past ages a much greater rapidity and intensity of variation than we see at the present moment. But these are only samples of a variety of objections, more or less forcible, which have been made against the theory, and which can hardly be said to have been removed. A popular statement of some of these, and a popular refutation of them, may be seen by those who do not care to read harder books in Mr. Stebbing's clever little volume. It is a collection of lectures and letters illustrative and explanatory of Darwinism, which correct many popular errors and clear away many popular difficulties about the theory, but do not, as we think, remove any of the graver objections to which we have referred. In particular Mr. Stebbing seems to us to have scarcely taken the trouble to understand Mr. Wallace's argument on the origin of Man: he has certainly dismissed it in a very cursory manner and with some flippant and irrelevant remarks, which we are sorry to see that Mr. Darwin has thought it worth while to endorse by copying into a note in his last book. They contrast strongly with the calm, clear, passionless and candid style in which Mr. Darwin himself writes.

And this style of defence is the less needed, because Mr. Darwin has really very considerably qualified in this last book the claims which he originally advanced:—

> I now admit (he says) that in the earlier editions of my *Origin of Species*, I probably attributed too much to the action of Natural Selection, or the survival of the fittest. I have altered the fifth edition of the *Origin* so as to confine my remarks to adaptive changes of structure. I had not formerly sufficiently considered the existence of many structures which appear to be, as far as we can judge, neither beneficial nor injurious; and this I believe to be one of the greatest oversights as yet detected in my work.

That is a general qualification. In regard to the special case of Man, he makes another yet more important. After specifying the action of Natural Selection, of habit transmitted by inheritance, and of sexual selection in modifying the progenitors of the human race, he adds—

> An unexplained residuum of change, perhaps a large one, must be left to the assumed uniform action of those unknown agencies, which occasionally induce strongly marked and abrupt deviations of structure in our domestic productions.

This amounts, as it seems to us, to a confession that Natural Selection may, after all, play only a secondary part in the differentiation of species,—that there may be behind and above it an "unknown agency," giving the first impulses in certain definite directions which natural selection cannot alter, and shaping the channels along which alone natural selection is free to act. It is a vast concession, and one which seems to us to cover all that a large portion of those who dislike Mr. Darwin's theory on other than purely physical grounds need ask for; since it is obvious that we may assign this "unknown agency" to any cause, personal or impersonal, which other reasonings may suggest to us; and if we assign it to the finger of God, it will amount to a perpetual divine superintendence of the physical development of the world.

It seems to us, then, that we are justified in asserting that the Darwinian theory, in its strictness, is not proved, nor likely to be proved. But it must be carefully borne in mind that this assertion applies only to the special agency which Mr. Darwin has brought into prominence. It does not deny that species may vary, or that all existing species may be developed from common progenitors, very different from themselves: it only says that Natural Selection is by itself unable to produce this result. But Mr. Darwin does not regard this as the whole object of his work:—

> I may be permitted to say (he continues in the passage from which we have already quoted), as some excuse, that I had two distinct objects in view—firstly, to show that species had not been separately created; and secondly, that Natural Selection had been the chief agent of change, though largely aided by the inherited effects of habit, and slightly by the direct action of the surrounding conditions. . . . . Some of those who admit the principle of Evolution, but reject Natural Selection, seem to forget when criticising my book that I had the above two objects in view; hence if I have erred in giving to Natural Selection great power, which I am far from admitting, or in having exaggerated its power, which is in itself probable, I have at least, as I hope, done good service in aiding to overthrow the dogma of separate creations.

Probably, he has not overrated his work in this last respect. For though it is pretty clear that the tendency of scientific thought is to limit and circumscribe the power of Natural Selection, it is not less clear that its tendency is to confirm and enlarge the general principle of Evolution. Very few naturalists of any eminence are bold enough now to claim for every species an absolute separation from every other, and a distinct act of creation out of nothing for itself. Certainly Mr. Darwin's most eminent opponents will not do this. Mr. Wallace, whose authority we have quoted against Mr. Darwin's view of the Descent of Man, is of course a thorough Darwinian up to a certain point. And though he thinks that Natural Selection, alone and unaided, could not have developed Man out of the lower forms of life, he nevertheless holds that Man was developed out of those lower forms, under the guidance of some superintending Intelligence, in much the same way that the greyhound, under man's superintendence, has been developed out of the ordinary type of dog. Mr. Mivart, who has brought, as we think, such forcible objections against the sufficiency of Natural Selection in many instances, nevertheless acknowledges fully its power in many others, and allows it to play an important secondary part to a primary law, as yet unknown, of Evolution. This primary law he describes as an internal force or tendency which determines the general direction of development in each case, and every now and then, by a sudden impulse, gives birth to a new species. Mr. J. J. Murphy, whom we are glad to number among the correspondents who have enriched our own columns on this subject, in his remarkable book on *Habit and Intelligence*, in which also some of the difficulties of Darwinism are very clearly exhibited, adopts a view which seems to be nearly the same. But he goes a little further, and ventures to give a name to this primary law of Evolution, which he calls an "organising intelligence which guides the action of the inorganic forces, and forms structures which neither Natural Selection nor any other unintelligent agency could form." This intelligence, however, Mr. Murphy considers to be an "unconscious" force, like that, for instance, which maintains the action of the heart, or the respiration of the lungs; and this Mr. Mivart justly observes is a conception "exceedingly difficult to understand," and one which "to many minds appears to be little less than a contradiction in terms, the very first condition of an intelligence being that, if it knows anything, it should at least know its own existence." The point, however, to which we wish to call attention at present is that, while rejecting Natural Selection as insufficient, he feels compelled to endeavour to substitute for it some other law of Evolution. Professor Owen, who is popularly credited with a general opposition to views of this kind, which he has in reality carefully guarded himself from undertaking, does much the same. He attacks Natural Selection somewhat vehemently, but he substitutes for it, in the third volume of his "Anatomy of Vertebrates," a theory of "Derivation" which would be at least as offensive as Mr. Darwin's to many of his uninformed admirers. He speaks distinctly of having "abandoned the old error" of believing that the existing forms of life are "the result of a primary, direct, and sudden act of creational construction," in favour of the theory that they are the result of "a continuously operating law." And he explains this law by the following sentence:—"Derivation," he says, "holds that every species changes in time, by virtue of inherent tendencies thereto." And he expressly includes Man within its reign. It has acted, he says, "not only successively but progressively, from the first embodiment of the vertebrate idea under its old Ichthyic vestment until it became arrayed in the glorious garb of the human form."

While, then, we may fairly demur to the assumption that the theory of Natural Selection, in the sense of an agency all-sufficient to account for the diversified forms of life, is proved or likely to be proved, we must not suppose that in doing this we are discrediting the far larger doctrine of Evolution. Natural Selection is only one particular process amongst others by which Evolution is conducted. If this should prove unequal to carry out the work assigned to it, some of that work must be thrown upon other agencies: but it does not follow that the work itself will be left undone. The general doctrine of Evolution rests upon arguments of its own quite distinct from those which sustain the special doctrine of Natural Selection; though the former are of course useful, and have been used, in clearing the ground for the latter. And while the illustrations we have adduced show, as we think, that Natural Selection has lost ground in the last few years, they show also that Evolution has not been weakened by this loss. In dealing, therefore, in any practical way with the relations of these theories to morals and religion, we are bound to consider not only the special case of Natural Selection, but also the broader one of Evolution. It would be a waste of thought for this purpose to examine the former only and neglect the latter. It would be a disingenuous evasion to allege objections against the former, and assume that we were thereby entitled to dismiss the latter. Evolution is not, of course, proved yet any more than Natural Selection; but no one who has studied the literature of the subject will venture to say that it is not gaining ground. Indeed, it would not be a rash inference from present appearances to say that the scientific—and therefore in due course of time the popular—mind will rest ultimately in some theory of Evolution with the same certainty that it now rests in the theory of Gravitation.

But if this is the case, what is a Christian's duty towards any of these theories of Evolution—whether it be a theory of Natural Selection, of Derivation, of Innate Tendency, or of Unconscious Organising Intelligence? If they are, like disputed theories in other departments of knowledge, matters of indifference to him, he has no duty towards them, until they are proved or disproved, except that of suspension of judgment. But if they touch vital points of his belief or practice, this attitude becomes impossible; and the more impossible, the more clearly the solution of the questions under discussion seems to be settling into one or other direction. Is this the case, then, with this doctrine of Evolution? Is it so manifestly inconsistent with the Christian's position that he cannot even suspend his judgment about it? Is he bound to proclaim war against it beforehand, and to take measures for excluding it, as a foe whose admission into his stronghold would be fatal to his very life? It cannot be denied that very many do regard it in this light; but it is high time to examine seriously and quietly whether their fears are just. If it should turn out that they are unnecessary, it does not of course follow that we should at once embrace the doctrine in question; but it does follow that we may sit secure in a quiet faith, and watch the controversy with an impartial and not very anxious eye.

Let us observe, then, in the first place, that a theory of Evolution need not be in the least degree opposed to Natural Religion. Such theories are often stigmatised as atheistic, and it is of course quite possible that some of those who maintain them may be atheists; but in themselves they are neither more nor less atheistic than any other theory of the way in which things that now came into being. For every theory of Evolution implies a beginning. There must be something to evolve from, and that, too, something endowed with a wonderful potency. What origin can be assigned to this something except the *fiat* of the Creator? Remove the origin as far back as we choose into the abysses of past time, we cannot help coming to it at last, and when we reach it we must either stop short there—which is the position assumed by most modern non-theists, who simply say that they have reached the bounds of human knowledge and can get no further—or we must assign it to the Will of a Creative Intelligence. Mr. Mivart draws a just distinction between *primary* and *derivative* creation, the former being the origination of something out of nothing, and the latter being the unfolding of the potentiality which lay hid in the primarily-created germ. Both processes may be properly called Creation, since the Creator is the author of the potentiality no less than of the germ itself: and Evolution, while it directly teaches the one, certainly does not deny the other. A correspondent in these columns, who signs his letter with initials that have a well-earned title to our deference in theological science, "J. G. C.," put this matter very well the other day. "We shall soon," he writes, "be seeing butterflies in the meadows. Do I deny that they were created by the Divine *fiat* if I say that they were evolved out of caterpillars? And if the caterpillars again were evolved from *ova*, may I not still refer all to an Almighty hand as the original source of life? And how is the matter altered if the chain of Evolution be lengthened?" This is a mode of speech which, whatever may have been said by some of his followers, would probably meet the assent of Mr. Darwin himself. For he has taken some pains to proclaim himself a theist. Mr. Mivart opportunely reminds us that "he frequently uses that absolutely theological term 'the Creator,' and that he has retained in all the editions of his *Origin of Species* an expression which has been much criticised. He speaks of 'life with its several powers having been originally breathed by the Creator into a few forms, or into one.'" But there is no occasion to urge this any further. It must be quite plain to any one who will take the trouble to think about it that there is no necessary opposition between Natural Religion and Darwinianism, or any other theory of Evolution.

But it does not therefore follow that there is no opposition between these theories and Revealed Religion. And many good people are ready to exclaim at once that they are absolutely contradicted by the account of the Creation in the Book of Genesis. But is this so certain as they assume? The reiterated phrase "after his kind" applied both to the vegetable and the animal kingdom, certainly suggests the idea of a separate creation of each particular species, and there can be little doubt that this was the idea in the mind of the inspired writer. But if one phrase is to be restricted to its logical significance, the same course must be taken with others; and the words, "Let the earth bring forth grass," "Let the waters bring forth abundantly the moving creature that hath life," "Let the earth bring forth the living creature," might be alleged on the other side. For these words assert, as literally and distinctly as it is possible for words to do, a doctrine of Evolution; and that, too, at the point in which Evolution finds most difficulty. For they assert the evolution of life out of matter, of the organic from the inorganic, of grass and cattle from the earth, of fish and fowl from the waters. What are we to understand by these words? Are we to take Milton's splendid but somewhat grotesque picture for a fact, and image to ourselves "the tawny lion, pawing to get free his hinder parts" from the clinging earth? Are we meant to believe that in actual fact "the swift stag from underground bore up his branching head?" The answer will probably be that this language is metaphorical and must not be pressed too closely; that all that is intended is to express the facts of the peopling of earth and sea and air with life; that the process by which this was effected, being utterly inconceivable by human thought, could only be expressed intelligibly in such inadequate forms as human language offers; and that similar objections might be taken to any words in which so transcendental a conception as Creation might be clothed. Such an explanation is a sufficient argument against pressing these words into a Scriptural defence of Evolutionism; but then it is equally valid against pressing those other words into a Scriptural attack upon it. But the whole discussion is in truth beside the mark. It is a misuse of the sacred narrative to employ it either in maintaining or overthrowing any view of the method or process of creation. Its grand and simple language is ample enough to cover, but not precise enough to be identified with, any particular theory. To each of us it seems naturally enough to present that view of the construction of the universe with which we happen to have been familiarised, and hence every new theory seems at first sight to be opposed to it. But every new theory, as it becomes established, finds somehow its place in the scheme. Without formal reconciliation it ceases, as it grows familiar, to present any difficulty. No one now is much troubled by the fact that he has learned to regard the earth as a subordinate satellite in a single system which is itself but a speck in the infinity of worlds, although the words of the sacred writer, in their plain and natural meaning, describe it as the primary work of God, to which the creation of sun and stars was secondary and subsequent. Nor are many people much disturbed now because they find it impossible to believe that all the various strata of the earth, enshrining the relics of so many successive eras of life, were fashioned within the compass of a single week, not more than six or seven thousand years ago. Yet both these have been felt in their time as very serious difficulties in the way of Religion. They have been surmounted probably by different methods in different minds. Certainly no one form of "reconciliation" can be said to have received the sanction of general acceptance. Nor is it necessary that it should. Verbal questions about the duration of the Creative Day, baseless and useless theories about the interpolation of measureless ages between the first and second verses, quibbling interpretations that empty all language of its meaning by requiring us to believe that "making" sun, moon, and stars is equivalent to clearing away a mist that hid them, are all out of place here. The real, though often doubtless unconscious, ground of acquiescence lies far behind all these. It lies in the conviction that these things are beside the mark and outside the range of the great spiritual truths, of which alone the Bible is the proper and peculiar vehicle. That noble "Psalm of Creation," as Mr. Rorison, in the antidote to "Essays and Reviews," has appropriately called the first chapter of Genesis, is not to be interpreted word for word as if it were a legal document. It teaches the great lesson which it is commissioned to bear to men, whenever it presents a vivid picture of an all-powerful Creator evolving by His good pleasure in law and time and order everything after its kind, implanting in the matter which He calls forth from nothing the power to fulfil His purpose, and sustaining, upholding, and animating that power by the perpetual action of His Will—that Divine Will which Mr. Wallace has described in a fine passage as being not merely the ultimate but the only force in the universe. And if this is the true lesson of Scripture, that lesson is certainly not contradicted by the doctrine of Evolution.

But are there any reasons in theology or ethics which must compel us to withdraw Man from the scope of this doctrine? Is there anything which makes it necessary to assert that he came into being by a separate and sudden act of the Creative Will, instead of ripening through slow, gradual, and hidden processes, and at last, in the fulness of time, unfolding into the late-blossoming flower of the great Tree of Life which was planted in the beginning? Let us turn again to the sacred narrative. In the first account of Creation, the birth of Man is accompanied by august circumstances. The grandeur of the event is shadowed forth by the symbol of a regal consultation and a purpose reached through deliberation. The Divine Image is the pattern after which he was made. But all this says nothing about the manner in which he was made. It was effected like the rest of the creation, "by the Word of the Lord." If Evolution is not excluded by the language of the earlier verses, it is not excluded by this one. The second account is, however, more particular. There the Almighty is depicted as forming Man by two distinct and successive acts. He fashioned a body out of dust, as the potter moulds a figure from the clay, and into the nostrils of this lifeless statue He breathed the breath of life. This is obviously a metaphorical description, that must not be construed more literally than where it is said, a few chapters later, that "the Lord smelled a sweet savour" from Noah's sacrifice. But it seems to point to a double origin for Man—one, whereby he is connected with the lower orders of life, fashioned like them out of the inorganic earth; and another, whereby he draws a higher life from another source. Such a view seems to favour a theory, which would derive Man's body and lower nature from the inferior animals, while it superadded something special as the direct gift of God to him. It is not inaptly represented by that notion of Mr. Wallace's, which raises Man to his place in the world by a sort of special Divine Selection. Something of this kind seems to be accepted as admissible by the Bishop of Ely when he writes thus in the *Speaker's Commentary*—"It also deserves to be borne in mind, that even if it could be made probable that Man is only an improved ape, no physiological reason can touch the question, whether God did not, when the improvement reached its right point, breathe into him 'a living soul,' a spirit 'which goeth upward' when bodily life ceases. This, at least, would have constituted Adam a new creature and the fountain head of a new race." That appears to be also the view which "Scrutator" has ably advocated in these columns, when out of the three component parts of Man, according to St. Paul's psychology,—body, soul, and spirit,—he has no objection to derive the two first from the beasts, if he may be allowed to draw the last direct from God. This, of course, would not satisfy Mr. Darwin: but we have seen that his argument, which is strong in regard to Man's bodily form and lower appetites, becomes weak and vulnerable precisely as he approaches the higher faculties of Language, Conscience, and Self-determining Will.

But we do not mean to urge this view as the necessary interpretation of the metaphor of the sacred text. It is clearly a matter on which there is room for difference of opinion. It is sufficient for our purpose if it be admitted as not improbable. For all that we are desiring to show is that there is no reason for placing theories about the "Descent of Man" under the ban of religion. No such theory has yet been proved: it may be that no such theory ever will be proved. It is quite possible that the lines of argument which seem to point towards this end now may, by some future discovery or some new application, be entirely reversed. But if this should not happen, and if any such theory should ever reach the point of general acceptance, it seems clear also that it may be admitted within the circle of religious thought with no greater difficulty than has been experienced before in the admission of other novelties. Astronomy and Geology have both gone through this process. They have supplied ideas which seemed at first very difficult to harmonise with faith, but which have ended by being quietly appropriated by it. There is no reason to suppose that Biology will have any different history. It is now fermenting with fresh notions just as Geology was in the last generation, as Astronomy in a more distant past. When these

Reproduced with permission of the Cambridge University Library

tion. This primary law he describes as an internal force or tendency which determines the general direction of development in each case, and every now and then, by a sudden impulse, gives birth to a new species. Mr. J. J. Murphy, whom we are glad to number among the correspondents who have enriched our own columns on this subject, in his remarkable book on *Habit and Intelligence*, in which also some of the difficulties of Darwinism are very clearly exhibited, adopts a view which seems to be nearly the same. But he goes a little further, and ventures to give a name to this primary law of Evolution, which he calls an "organising intelligence which guides the action of the

these theories and Revealed Religion." And many [illegible] ready to exclaim at once that they are absolutely contradicted by the account of the Creation in the Book of Genesis. But is this so certain as they assume? The reiterated phrase "after his kind" applied both to the vegetable and the animal kingdom, certainly suggests the idea of a separate creation of each particular species, and there can be little doubt that this was the idea in the mind of the inspired writer. But if one phrase is to be restricted to its logical significance, the same course must be taken with others; and the words, "Let the earth bring forth grass," "Let the waters bring forth

desiring to show is that there is no reason for placing theories about the "Descent of Man" under the ban of religion. No such theory has yet been proved: it may be that no such theory ever will be proved. It is quite possible that the lines of argument which seem to point towards this end now may, by some future discovery or some new application, be entirely reversed. But if this should not happen, and if any such theory should ever reach the point of general acceptance, it seems clear also that it may be admitted within the circle of religious thought with no greater difficulty than has been experienced before in the admission of other novelties. Astronomy and Geology have both gone through this process. They have supplied ideas which seemed at first very difficult to harmonise with faith, but which have ended by being quietly appropriated by it. There is no reason to suppose that Biology will have any different history. It is now fermenting with fresh notions just as Geology was in the last generation, or Astronomy in a more distant past. When these notions have fairly emerged into their ultimate shape, it will be time enough to attempt to define their exact relation to Theology. For the present, it is sufficient to see that they are not necessarily inconsistent with it. This will enable us to await the verdict of Science, which seems yet a long way off, on these topics, without manifesting unseemly alarm or indulging in gratuitous denunciations.

One popular argument against the development of Man we have not noticed, because it seems to us to be devoid of any real substance: we mean the allegation that any such view is "degrading" to Man. Even if this were admitted, it would be irrelevant in an argument which seeks, not nobility, but truth: but it seems to us to be pure nonsense. Man's place in creation depends on what he is, and not on the way in which he was made. The individual man is not the less a man because he was once a boy and before that a baby, to say nothing of the stages of existence which preceded even this: nor would the species lose one iota of the grand attributes that belong to it if it should turn out that it also had passed through inferior stages on the way. Nor would it in the smallest degree affect either our duties or our hopes. These spring from our actual constitution, in whatever way that constitution was attained. Its present aspect is painted in the well-known words of Hamlet, "What a piece of work is Man! How noble in reason! How infinite in faculty! in form and moving how express and admirable! in action how like an angel! and in apprehension how like a god! the beauty of the world, the paragon of animals!" This glorious picture is equally true, whatever theory may be held about the birth of the original. That we are moral beings, with a knowledge of good and evil, a wide-ranging reason, high-reaching aspirations, devout yearnings, beautiful imaginings, and a conscience claiming supremacy over all, is a simple matter of fact: and from this fact flow all the convictions on which our life is framed. It is our actual constitution, and not any theory about our ancestry, which creates Duty, which gives the sense of brotherhood and community to the whole species, which links us to our first true ancestors by laws of inheritance that reproduce the tendencies to evil as well as to good—it is this, lastly, and not surely any mere physical and material connection, which joins us with Him who was pleased to enter into our species and cast over it the spiritual viability and pre-potency, if we may reverently transfer to a higher sphere the technical terms of Biological science, of His own Divinely human life. There is nothing degrading in the notion that Man, in the words of Tennyson—

> "Throve and branch'd from clime to clime
> The herald of a higher race
> And of himself in higher place"

if only he rise to the full measure of the capacities of that higher place and ever

> "Move upward, working out the beast,
> And let the ape and tiger die."

Nor is there any reason why a man may not be an Evolutionist and yet a Christian. This is all that we desire to establish. For we repeat, in conclusion, what we have already said more than once before, that Evolution is not yet proved, and never may be. But we add also that there is no occasion for being frightened out of our wits for fear it should be.

© Reproduced with the permission of Cambridge University Library