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ART. I.—*The Theory of Evolution, and its Relations to Religious Thought.*

The Scientific Use of the Imagination. A Discourse delivered before the British Association at Liverpool, on Friday evening, September 16, 1870. By JOHN TYNDALL, LL.D., F.R.S. London: Longmans, Green, & Co. 1870.

The Descent of Man, and Selection in Relation to Sex. By CHARLES DARWIN, M.A., F.R.S. 2 Vols. London: John Murray. 1871.

WE are frequently told in the present day that Science and Faith are in perfect harmony, and that the revelation given by God in His word agrees with that contained in His works. In one sense, this is a truism. God's word, rightly interpreted, and nature fully understood, cannot contradict one another. But it is very far from being true that scientific thought and religious thought are at present running in parallel grooves. Between many theories of modern science and our time-honoured religious beliefs there is the sharpest antagonism. And nowhere is this antagonism more forcibly shewn than in connection with some of the hypotheses recently advanced to account for the origin and present condition of the earth and its inhabitants. The possibility of reconciling these with many doctrines essential to Christian faith, is, we believe, more than doubtful.

Of course we are prepared to admit that some of our ideas with regard to creation and the past history of our planet have recently undergone a change, and that we cannot claim to have been infallible in our interpretations of the opening chapters of Genesis. And that even yet in regard to this portion of God's Word we should beware of dogmatism is obvious, for the advance of science has given us reasons which should convince us that the Bible narrative is intended to be somewhat indefinite. The progress made in recent scientific research, proves that God has endowed us with powers which, if rightly directed, will disclose to us much of the mode and order of creation; and it is not the function of revelation to convey to us truth which we can discover without its aid. We must acknowledge, also, that we have been led into error in the past by introducing ideas suggested by human action into our conception of the Creator. We have almost been in the habit of regarding God, in this aspect, as a Being endowed with powers the same as those which we possess in *kind*, although immensely different in *degree*. We pushed the analogy between the maker of a watch and the maker of a world too far, and almost brought ourselves to believe that God was, as we are, limited in His working by the properties of matter and force, and that in the accomplishment of His plans, He was obliged to adopt such methods as our minds can devise. We have no ability to fashion a thing with such properties that it will gradually accommodate its usefulness to a changing use,—we must proceed by the *separate creation* plan in our working,—and we limited the Creator by ideas derived from our own feebleness. But most of us are now convinced that we foreed a meaning on the scriptural account of the creation which it was never intended to convey, and believing, as we do, that[1] "there are no fictions in nature," we have come to the conclusion, that "scarped cliff and quarried stone" teach us the lesson that the growth of a world is not a thing of days, or weeks, or months, but that one grand law of order and progress has ruled for countless ages through all God's universe. Here, however, our admissions end. We have not ceased to see marks of design, and the continuous working of a guiding and governing Intelligence in the world around us. On the contrary, we see them now more clearly than

[1] "Reign of Law," by Duke of Argyll, p. 268.

was ever possible before, for science has revealed on every side thousands of beautiful adaptations unknown to our ancestors. We have made no modification of our views in the direction of that theism which would put a "law of evolution" in the place of God. We admit the value of the doctrine of evolution when applied to throw light on some of God's methods of working, but we repudiate it utterly when applied to exclude Him from His works. This application of it we are constrained, on purely scientific grounds, to consider both misleading and untrue, and not less hurtful to science than hostile to faith.

Since the publication of the "Nebular Hypothesis" of Laplace, the doctrine of evolution has received marked attention and support from many men of distinguished attainments in philosophy and science. M. Comte has employed it to account for the varying forms of human thought, and has made it, as applied to the phenomena of mind, the basis of his Positive Philosophy; Mr Buckle has used it in attempting to construct a Science of History; Mr Tylor, Sir John Lubbock and others have applied it to explain the elevation of man from a state of the most degraded barbarism to the highest civilisation, and to ultimate apotheosis; while in the department of biological science we have the speculations of Mr Darwin, and the still more daring speculations of Mr Herbert Spencer, M. Vogt, and Professor Häckel. In fact, there is nothing

> "In the round ocean, and the living air,
> And the blue sky, and in the mind of man"[1]

the existence of which has not been accounted for by this all-embracing hypothesis. Even our ideas of virtue, truth, and God, we are told, are to be regarded as fictions of the mind, evolved by the ceaseless activity of human thought. We propose in the present paper to examine the theory of evolution as employed in biological science, confining ourselves mainly to that application of it which is now attracting so much attention, its application by Mr Darwin to account for the origin of man.

We have placed at the head of this article the titles of two works very different in their importance, scope, and aims, but both of interest in a discussion on the theory of evolution viewed from the standpoint of science. Professor Tyndall's lecture,

[1] Wordsworth, "Tintern Abbey."

although brief, and principally occupied with matters outside our present inquiry, is important because it contains a statement of the theory in its extreme form made by a leading scientific man before the assembled leaders of science in these kingdoms. Mr Darwin's book, as our readers are aware, contains the fullest and most forcible exposition yet given of the arguments which are supposed to prove the origin of man by development from some lower animal form.

The doctrine of evolution, as expounded by modern scientific men, is stated in different forms of more or less generality. In its most general statement it asserts, that in the nebulous matter which, by its condensation, formed the sun and planets of our system, forces were latent which, by their action on the matter of our globe, formed everything which exists on its surface,—vegetable life, animal life, mental activity and moral states. No break in the process of evolution has occurred, and no necessity has existed for the intervention of any active and guiding intelligence. Who formed this nebulous matter, and impressed on it its marvellous properties, is not stated, the problem of its origin being relegated to the sphere of the "unknown and unknowable." But it possessed from the beginning (if it had a beginning) all the forces required to develop, by their action on the particles of incandescent vapour, the beauty, life, intellect, and moral feeling of the world which we inhabit.

"What are the core and essence of this hypothesis? Strip it naked and you stand face to face with the notion that not alone the more ignoble forms of animalcular or animal life, not alone the nobler forms of the horse or lion, not alone the exquisite and wonderful mechanism of the human body, but that the human mind itself—emotion, intellect, will, and all their phenomena—were once latent in a fiery cloud. . . . I do not think that any holder of the evolution hypothesis would say that I overstate it or overstrain it in any way. I merely strip it of all vagueness, and bring before you, unclothed and unvarnished, the notions by which it must stand or fall." (*Scientific Use of the Imagination*, p. 38.)

This is the form in which the doctrine of evolution is taught by Häckel, Vogt, Büchner, and other eminent continental biologists, and by Mr Herbert Spencer. And it is the form in which it must be held by all who are thoroughgoing Darwinians; and who, at the same time (like Professor Huxley), accept, as an article of "philosophic faith,"[1] the evolution

[1] "British Association Address," 1870.

of living forms from non-living matter in the early stages of the earth's history. Indeed, Professor Huxley states it directly when he speaks of "Nature's great progression from the formless to the formed, from the inorganic to the organic, from blind force to conscious intellect and will."[1]

Now, we consider that the theory of evolution, as stated in this form, comes into sharp collision with many of our most cherished religious beliefs. We have no sympathy with the high-flown language in which some theologians have thought fit to describe the grand conception of the Deity which we may derive from it—the conception of an all-wise, all-powerful Being, seeing the end from the beginning, and instituting an order of things in which, without guiding or controlling agency, "reigns unbroken sequence and continuity, and the majestic presence of power and law." We are disposed to think that if this theory were universally understood, appreciated in its consequences, and accepted, it would be utterly subversive of all that deserves the name of true religion. A distinction is now drawn by some scientific men between religion and theology (the former term not being defined, and the latter meaning Christian faith); but we can conceive of nothing deserving the name of religion which does not teach that the man of noble aims, blameless life, and reverent spirit, is somehow nearer the unseen and higher Power than the stone, the plant, the brute, or the immoral man. We know that we can but share a portion of the great Father's care, and that not a sparrow falls to the ground without His notice, but surely nothing deserves the name of religion which does not teach us that we may somehow become in His sight "of more value than many sparrows." If it be true, however, that we stand in no closer relation to Him than the crystal, or plant, or beast, or bird, —that they and we are alike the result of the action on matter of forces, governed by inexorable law,—how can we cherish any such belief, or admit moral responsibility here, or existence hereafter? We are merely portions of matter, for a time the sphere of action of forces of wonderful complexity, coming we know not whence, drifting we know not whither. "Let us eat and drink, for to-morrow we die." "Trust me," says Professor Tyndall, speaking of this theory of evolution, "its existence as an hypothesis in the mind is quite compatible

[1] "Evidence as to Man's Place in Nature."

with the simultaneous existence of all those virtues to which the term Christian has been applied."[1] This may be the case. The man of high intellectual culture, busy brain, and moderated passions, may believe most pernicious doctrine, and yet lead (as far as outward acts are concerned) a blameless life. But it is very far from being universally true that men are better than their creeds. And were all the youth of the present generation prepared to accept, with all its theological consequences, the doctrine of evolution in its extreme form, we fear that "those virtues to which the term Christian has been applied," would soon become extinct. Even the success of philosophers in handling live coals without being burned, we are inclined to doubt. It is a fact, proved by the writings of Vogt, Büchner, and others nearer home whom we could mention, that those who begin by utterly excluding God from His works, soon find themselves unable to believe in His existence at all.

The more usual form, however, in which the doctrine of evolution is held, is not the one just stated, but that in which it is advocated by Mr Darwin, who has done more to advance evolution theories than all the other scientific men of the day combined. Whether or not Mr Darwin holds the doctrine in its most general form we cannot tell. We are inclined to believe that he does, and that he is restrained from announcing it in the "Descent of Man" for the same reason which, he says, prevented him from stating his views with regard to man in his "Origin of Species"—the dread of arousing prejudices against his opinions. But at all events he does not teach the doctrine as yet. He confines himself to the attempt to prove that, given the simplest living form, all other living forms may be developed by natural and sexual selection, and that, therefore, between man and the lower animals there is a difference of degree only, and not of kind. This form of the doctrine of evolution is, at first sight, less repulsive than that already referred to, because it seems to admit the possibility of at least one break in the chain which connects man with the primeval mist, and therefore to acknowledge the possibility of the existence of an intelligent Creator, contemplating the changes going on in our globe, and prepared, when it was fitted to be the abode of living organisms, to say, "Let life be." But we believe that its theological tendencies

[1] "Scientific Use of the Imagination," p. 40.

are quite as objectionable. It brings man nearer to the Creator than the stone, but no nearer to Him than the brute. And it hardly enables the scientific man to stand on as high a platform as the "poor Indian," who, in picturing "the happy hunting grounds,"

> "Thinks, admitted to that equal sky,
> His faithful dog shall bear him company,"

for it renders the future existence of either man or dog more than questionable.

The third form in which the doctrine of evolution is held, and in which we believe it to be scientifically tenable, is that accepted by perhaps the majority of scientific men, and by many able theologians. It asserts that the earth has passed through a vast series of changes, tending to bring it to its present condition, under the action of forces working continuously under fixed laws. It admits the value of the theory of Natural Selection as applied to account for great changes in animal organisms, and the possible development of new species. But it denies that this theory, even as applied to the lower animals, explains all the facts to be accounted for, and, at the very most, can only consent to regard it "as one of the most brilliant of those broken lights which have been shed from time to time by gifted men on the plan of the divine Creator."[1] And it denies that any evidence has been adduced to prove the evolution of living forms from non-living matter, or that the development of man from any known animal form is either proved or provable. It admits the probability of "Creation by Law," but denies that creation by law is creation without God. Stated with these restrictions, we do not see that the doctrine of evolution comes in contact with the teachings of Scripture at all, however it may conflict with traditional preconceptions which have become bound up with our religious beliefs. With an inquiry into its truth or falsity, the theologian, as such, has, we think, nothing to do. "It is," says Dr M'Cosh, speaking of its application to account for the origin of species amongst the lower animals, "a question to be decided by naturalists and not by theologians, who, so far as I see, have no authority from the Word of God to say that every species of tiny moth has

[1] Introductory Lecture to the Natural History Class in Edinburgh University. May 1871. By Professor Wyville Thompson, LL.D., D.Sc., F.R.S.

been created independently of all species of moths which have gone before."[1]

With the theory of evolution, however, as stated either by Professor Häckel or by Mr Darwin, the theologian, as we have indicated, has immediately to do, and in his view these two forms of the theory must stand on one level. If man does not in some respects differ in kind, as well as in degree, from the lower animals, it is a matter of small importance whether he be developed ultimately from an Ascidian, or a mass of incandescent vapour. Scientific men may discuss the relative merits of the two hypotheses, but if either be accepted, farewell to the faith and culture in which we have been nurtured. If man's intellectual powers, and his conceptions of morality and God, are a mere natural growth from the faculties and feelings of the brutes, most earnest men will admit that the ideas by which we have hitherto tried to shape our lives are a mistake. Our ideas of moral responsibility, immortality, and God, must be considered to be mere delusions, developed for the good of society, which, having now served their purpose, are to be given up for a new and higher faith. Religion being a mere outcome of our mental activity, of varying form according to the stage of mental growth which we have reached, all religions must be regarded as intrinsically equally valuable, and therefore equally valueless, and a change in thought must occur which will ultimately produce a corresponding change in men's lives, and endanger the stability of our whole social fabric. The consequences are the same as would follow from the general acceptance of that gross form of materialism which regards man as a mere aggregate of vibrating molecules—a result of the continued action on matter of the forces latent in a nebulous fluid.

Of the two possible breaks then in the chain of development, that between living and non-living matter, and that between man and the lower animals, it is, so far as we can see, only important for us to assure ourselves of the existence of the second. Whether or not matter can, under certain conditions, be made to assume the properties called "vital," is a problem for the discussion of science, and we do not see that our religious beliefs will be affected by its decision one way or the other. It is otherwise with the question, Does a break be-

[1] "Christianity and Positivism," p. 39.

tween the brute and the man exist? or has science satisfactorily proved its non-existence?

By far the ablest and most complete attempt to prove the absolute continuity of the chain which connects man with the lower animals has been given us by Mr Darwin in his "Descent of Man." Although not the originator of the theory of Natural Selection, he was the first to bring it prominently into notice, and has always been its ablest advocate. He now attempts to extend to man the reasoning which he applied to lower animal forms in his "Origin of Species," and to strengthen his views by a reference to another source of variation in living organisms not previously dwelt upon—Sexual Selection. The result which he claims as an inference from his facts and arguments is, that man has been developed through a long series of varying forms from a small mollusk called the Ascidian. But we will allow Mr Darwin to give his conclusion in his own words. Having discussed the arguments in favour of his hypothesis, he continues thus:

"We can now 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, progenitors 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 amphibian-like creature, and this again from some fish-like animal. In the dim obscurity of the past we can see that the early progenitors of all the vertebrata must have been an aquatic animal, provided with branchiæ, and 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 larvæ of our existing marine Ascidians than any other known form." (Part II. p. 389.)

As Mr Darwin himself remarks, he has "given to man a pedigree of prodigious length, but not, it may be said, of noble quality."[1] However, if the pedigree be correct, we cannot alter it, and must be content. But what evidence is forthcoming to prove that it is correct? In his "Origin of Species," Mr Darwin explains how, on his hypothesis, an

[1] Part I. p. 213.

Ascidian may be developed into an ape. With a discussion of his reasoning on this subject, or any detailed examination of how far natural selection is sufficient to account for the origin of new species amongst the lower animals, we need not at present occupy our space. It is sufficient to say that there is a growing opinion among men of science that the Darwinian hypothesis, even as applied to the lower animals, leaves many facts unexplained. We shall content ourselves with examining the evidence given to prove that an ape may be developed into a man.

The two agencies which Mr Darwin affirms to be capable of effecting the changes required to produce from any given species another higher in the scale of animal life, are Natural Selection and Sexual Selection, and it may not be out of place to explain the meaning attached to these terms. It is a well-known fact that the actual increase of either plants or animals is far below their potential increase. A female salmon may produce nearly a million of eggs, and if each of these resulted in an adult fish, one year would suffice to transform the earth into an angler's paradise. But even in rivers that are not fished, the number of salmon does not increase beyond a certain limit. Again, a single pair of birds producing only two or three young ones in each year, and living say for twelve years on an average, would, at the end of that time, if the actual increase were equal to the potential, have some thousands of descendants, and the birds of any given district would soon have no room to move. But, practically, it is found that the birds of a district, even when uninterfered with by man, do not increase beyond a certain limit. Now, how is it that the actual and potential increase of any species are so different? "Nature, red in tooth and claw," proclaims that there is a basis of truth in the theory that "Nature is in a state of war." The stronger species prey on the weaker, and (we should note this point) the weakest and most simple of the latter are the most frequent victims. Again, altogether independently of the destruction wrought by hostile species, there are, in connection with each species itself, conditions unfavourable to its numerical increase beyond a certain limit. As soon as the food procurable in any given district becomes barely equal to the support of the animals which the district contains, a struggle for existence begins amongst members of the same

species, and in this struggle those possessing any advantage over their fellows, in the shape of greater strength or cunning, will succeed, and will leave the largest number of posterity. The above facts are expressed by the "principle of the survival of the fittest." There is next the "principle of heredity." Animals tend to transmit their peculiarities to their offspring, and those possessed of any advantage will therefore, to some extent at least, transmit it to their posterity. Then there is the "principle of variation." Unity in diversity is the law of nature. No two faces in a multitude, or, probably, even two leaves in a forest, are precisely the same. Hence the advantages transmitted vary slightly, and the most valuable are those ultimately transmitted. Again, external circumstances, say change of climate, or enforced change of habits, will render some variations more valuable than others, and these will be most largely transmitted. It is clear that in the long lapse of time deviations from the original type may have multiplied to such an extent, that a new species may be said to have resulted. Variations produced by the action of the above somewhat complex agencies, are said to be produced by Natural Selection.

That the theory of Natural Selection is unable to account for all the changes required to explain the origin by development of the different species of lower animals is (as we have already stated) now generally admitted. Even Mr Darwin himself, who was so positive as to its ability to explain all variations in animal forms, now acknowledges his error,[1] and supplements his theory by calling in the aid of Sexual Selection as an important agent in producing change. The great defect in the theory of Natural Selection is, that although it gives a satisfactory account of the *preservation* of the fittest, it gives no account of the *production* of the fittest. An animal possessing any advantage over its fellows, will surpass them in the struggle for existence and precedence. But how did the first favoured animal get its advantage? And how do changes,

[1] Compare "Origin of Species," Third Ed., p. 220, and "Descent of Man," Part I. p. 152. Mr Darwin admits his errors with great candour, but the fact that he has to acknowledge that some of his earlier statements, which were laid down with the utmost dogmatism, are erroneous, should not be lost sight of when he now calls upon us to accept sweeping assertions supported by slender arguments.

such as that which gave rise to the famous breed of Ancon sheep, suddenly arise? The theory of Natural Selection can give no satisfactory reply.

The theory of Sexual Selection is based on the fact, that in the reproduction of the species in almost all animal forms, choice is exerted, generally by the female, but sometimes by both male and female, in the selection of a partner. Thus any qualification required to attract or secure a partner, in the shape of strength or beauty, tends to be developed. Hence the greater size, strength, courage, and beauty of the male in many animals is explained on this theory by the fact that the males of these species contend for the more attractive females. And the attractive females being ultimately secured by, and mated with, the best endowed males, will tend to transmit their superior qualities to the offspring of both sexes, and thus a gradual elevation of the species will take place. Of course this is but an incomplete account of all that is implied in the theory of Sexual Selection, but it will suffice for our present purpose. It is unquestionably a theory which contains important truth; and Mr Darwin, in arguing in favour of it, shews a vast amount of learning and research. We believe however, that, after all, the majority of his conclusions are terribly overstrained.

There can be no doubt that natural selection, and sexual selection, can produce considerable changes in man in the savage state; and Mr Darwin has employed his theory most successfully to prove the unity of the human race. There is amongst savages the same struggle for existence as amongst the lower animals; and in the choice of partners where property is scarce, personal qualifications powerfully affect the choice. But as man becomes more civilised, the effect of these agencies is greatly diminished. Civilised men can derive sustenance from a far smaller area than savages, and can move with ease from place to place, and thus the struggle for existence becomes less intense; and they can better adapt themselves to changed external conditions, "for man is enabled, through his mental faculties, to keep, with unchanged body, in harmony with a changing universe,"[1] so that, all things considered, natural selection scarcely comes into play. Further personal qualifications cease to be the only attraction advantageous to those seeking to enter the marriage union, so that the effects

[1] Mr Wallace, *Anthropological Review*, May 1864, p. 158.

of sexual selection are inappreciable. To shew, however, that natural selection and sexual selection have had an influence in making man what he is, and that in his case there has been a progressive advance from a lower civilisation to a higher, is not enough for Mr Darwin's argument. The question is not, Is civilised man developed from the savage? but is man developed from the brute?

In attempting to apply the principles of his theory to account for the origin of man, Mr Darwin considers in order the development of his bodily frame, his mental powers, and his moral nature. The following is a summary of the arguments given to prove that man's bodily frame is developed from some lower animal form. Man is constructed on the same general type[1] or model with the other mammals. A close analogy, in especial, exists between man and the ape in regard to skeleton, muscles, nerves, blood-vessels, and internal viscera. Professor Huxley has proved that "man, in all parts of his organisation, differs less from the higher apes than these do from the lower members of the same group." Even the brain of man, as pointed out by Bischoff, has a close resemblance to that of the ourang. (A wider divergence, however, exists between the brains of the two species than between any other parts of their structure. At no period of development before birth do their brains agree; and although Mr Darwin seems to make light of this point, it is a most important one, as he himself demonstrates when pointing out how closely even widely-diverging species resemble each other in their early stages of embryonic development. We cannot help thinking that if he were arguing against, instead of for, his favourite hypothesis, we should find this point more dwelt upon.) Again, the close similarity between man and the lower animals in their tissues and blood, is shewn by the fact that man can receive from them, and transmit to them, certain diseases, such as hydrophobia, glanders, variola, &c. That this similarity is particularly close in the case of monkeys, is shewn by the circumstance that these animals, in a state of nature, are affected by some of the same non-contagious diseases to which man is liable, for example, catarrh, apoplexy, inflammation of the bowels, and cataract of the eye. Monkeys, too, have tastes the same as those of mankind in reference to food and drink, partaking

[1] Part I. p. 10, *et seq.*

readily of tea, coffee, and spirituous liquors. In proof of their taste for the latter, we are informed that they may be caught by exposing vessels filled with strong beer, of which they drink to intoxication. A monkey that has drunk to excess, next day suffers from headache, and evinces a partiality for preparations of lemon juice, like his more advanced brethren. (At this point, however, the analogy seems to terminate, for we are informed that a monkey that has once been intoxicated can hardly be induced to touch spirits again.) Further striking resemblances between man and the lower animals are also pointed out with regard to the progress of embryonic development, and the possession of rudimentary organs.

Now, were the above all the facts bearing on the question at issue, we should be obliged to admit the strong probability of the conclusion that man's body is a development from some lower animal form, and that our most recent ancestor is the ape. But there are other facts which point in another direction, and these have been elicited, and their importance shewn, by men who are most anxious to establish the theory of evolution, but who are too earnest in their search after truth, and too scientific in their modes of inquiry, to ignore, or undervalue, facts which controvert the conclusion at which they wish to arrive. No living naturalist is more competent to pronounce an opinion on the theory of Natural Selection, or is a more earnest advocate of that theory, than Mr Alfred R. Wallace. In fact, this theory, with all the truth which it contains (and applied to lower animal forms it contains a great deal of truth), was discovered and announced by Mr Wallace, independently of Mr Darwin altogether. Yet, in spite of the partiality which a scientific man must feel for a theory of which he is the originator, he has consistently affirmed that, by no process of natural or sexual selection can we account for the origin even of man's bodily frame. To disprove an hypothesis, one fact is as good as ten thousand; and Mr Wallace adduces a number of facts, which are utterly inexplicable on Mr Darwin's theory. One of the most important of these is the impossibility of accounting, on the development hypothesis, for the great relative size of the brain of man. The bulk of the human brain does not differ very much in civilised men and savages, and is now almost precisely the same as it must have been in the oldest specimens of our race of which a trace can

be found. Skulls which belong to races of men believed by archæologists to have existed in pre-historic times, are found to have a capacity indicating that no steady increase of cranial development in the human species has taken place. This bulk of brain is about three times that of the highest anthropoid ape. An impassable gulf, therefore, in regard to size of brain separates the oldest and most savage races of men from their nearest allies in the animal kingdom; and there is no evidence of any progression from the one to the other by natural law. We talk about Darwin's "missing link," but it should be Darwin's "missing chain." The width of the difference between man and the ape has been under-estimated. Mr Darwin himself speaks of "the great break in the organic chain between man and his nearest allies, which cannot be bridged over by any extinct or living species."[1]

But let us consider the force of the argument against the Darwinian theory derived from this fact, more fully. There is a close connection between brain size and mental power. That the one does not vary in exact proportion to the other, as the materialist would have us believe, is demonstrated; but nevertheless a close relationship exists. A large brain almost always indicates high intellectual ability; and, amongst Europeans, an individual with a brain of less than sixty-five cubic inches' capacity is invariably an idiot. Now, not only is the brain of the savage so great as utterly to forbid the hypothesis that it has been developed by any process of natural selection from that of the higher apes, but no explanation of its extraordinary size seems to be forthcoming, unless we admit,—what some naturalists are very unwilling to admit,—the doctrine of final cause. The civilisation (if we can use the word in this connection) of the very lowest savage is not above that of the brutes; and for the supply of his wants no intellect above that of the ape is needed or exercised. And yet he is supplied with a brain almost equal in potential capacities to that of civilised man. It cannot have been developed by any process of natural selection. In accordance with Mr Darwin's theory, it ought to be becoming smaller by disuse. But this is not the case. Is it unphilosophical to adopt the view of one of our greatest living naturalists, and assume with regard to the brain, as he does with regard to the larynx, that "it seems

[1] Part I. p. 200.

as if this organ had been prepared in anticipation of the future progress of man, since it contains latent capacities which are useless to him in his earlier condition."[1] Professor Huxley attempts to answer this argument[2] by urging that the wolf has as large a brain as the dog, and that the dog and wolf stand in the same relationship to each other as the civilised man and the savage. There would be some force in this if the difference of mental condition in the former instance were at all comparable to that in the latter. But this is not the case. The brain of the savage has an enormous *potential* capacity; the brain of the wolf has not.

The great size of the human brain is not the only fact inexplicable on the Darwinian hypothesis. As shewn by Mr Wallace, Mr Mivart, and Sir Charles Bell, the human larynx, the human eye, the human ear, and the human hand, are organs of such extreme sensitiveness, and, in their more delicate applications, so utterly unneeded and unapplied in savage life, that their existence in times past, and their continued existence, in spite of the tendency of disuse to dull and deaden their capacities, lead many even of the most ardent evolutionists to admit that in the case of man their favourite hypothesis utterly fails. When we consider how the exercise of man's highest capacities in science, literature, and art, are associated with the use of these portions of his organism, we can hardly avoid the conclusion that a gap was placed between him and the brutes by his being originally endowed with latent powers of which they were deprived, and that these were given him for use in that higher position for which he alone is fitted.

Bearing in mind, then, the facts which militate against Mr Darwin's theory, as applied to account for the origin of man's bodily frame, we can see more clearly the actual value of those apparently in its favour. They simply prove that man has a close affinity, in one part of his nature, with the lower animals; and surely this is no news in the latter half of the nineteenth century. "It is only our natural prejudice," says Mr Darwin, in summarising the arguments in favour of his views, "and that arrogance which made our forefathers declare that they were descended from demigods, which leads us to demur to this

[1] "Contributions to the Theory of Natural Selection." By A. R. Wallace, p. 350.

[2] *Contemporary Review*, November 1871.

conclusion."[1] We can hardly think so. When, "of the older and honoured chiefs in natural science, many unfortunately (?) are still opposed to evolution in every form,"[2] and when it is remembered that evolutionists of the eminence of Mr Wallace and Mr Mivart, are constrained to acknowledge that, in regard to man, Mr Darwin's theory is at fault; and when the weakness of the arguments for, and the strength of the arguments against, his views are considered, we think that anti-Darwinians can plead something more than "natural prejudice" and inherited "arrogance" in their favour. When the conclusion of a scientific argument is announced with warmth, it is not generally considered characteristic of thorough conviction, even in the mind of the arguer himself.

We may remark that some theologians at present seem disposed to admit the Darwinian theory of the origin of man's body, but to uphold the view that his mental and moral nature was introduced at some stage of his development, and that then he became really man. We believe that an eminent and orthodox theologian and metaphysician very nearly expresses this view when he says:

"The impression left on reading the account of the creation of man in the Book of Genesis, is that, while man's higher nature, his νους, which contemplates eternal truth and the infinite God, was produced at once by the breath of the Great Spirit, his lower nature, and especially his body, may have been formed out of existing materials, it may be by secondary causes."[3]

We do not see the necessity or desirableness of making any such admission as this in the present state of science. We do not assert positively that science will never compel this admission. An enormous number of extinct species of apes, and an enormous number of extinct races of men, may be discovered, so that by degrees the gulf which separates the thirty-two cubic inches of brain of the gorilla from the ninety cubic inches of brain of the savage, may be bridged over. But it has not yet been done,—it cannot possibly be done for years to come,—and in the opinion of the majority of our most eminent naturalists, it never can be done. And we must decline, in the interests of science itself, to accept the Darwinian view of the origin of

[1] Part I. p. 32.
[2] *Ibid.* Introduction, p. 2.
[3] "Christianity and Positivism," p. 354.

man's body, *until it is proved.* Theologians are at present in some danger of being betrayed into dangerous concessions, from the dread of being considered "narrow-minded," "prejudiced," "opposed to progress," and "filled with the Galileo persecuting spirit." We do not see that any modern Galileo has any right to complain if we give him a fair hearing, and believe all that he proves. But we should not rush forth to aid him in the promulgation of his crude theories. The mishaps of those theologians who demonstrated the Mosaic account of the creation to be in perfect harmony with geological theories which geology shortly afterwards gave up as untenable, should teach us caution. Although convinced that the citadel of Christian truth is impregnable, we should not be in too great a hurry to yield up outworks that may afterwards turn out to be, intellectually considered, the key of the position. We may rest assured that no such concession as the above will ever be considered sufficient by any thorough-going Darwinian. It introduces a departure from the great law of evolution, the use of the offensive term, "creation," an interference on the part of the Creator with His works, and a break in the chain which connects man with the Ascidian—none of which the Darwinian can admit. Besides, if at present the admission of the origin of man's body by development be made, it will be somewhat difficult to find popular and convincing arguments against a similar derivation of his mental powers. We believe that, even granting the derivation of man's body from that of the ape, it will be utterly out of the power of Darwinism to account for the origin of his mental and moral faculties. But we believe, also, that the arguments by which the failure of the evolution hypothesis in this instance could be demonstrated, are precisely those which would have least weight in this age when physical, and not mental, science is dominant. We would suggest, then, to theologians, in the interests of religion, as well as to scientific men, in the interests of science, to accept just as much of Mr Darwin's theory as is proved, and to be prepossessed in favour of just as much of it as proof may reasonably be expected for.

Having brought forward the arguments which he considers prove the origin of man's body by development, Mr Darwin proceeds to discuss those relating to the origin of his mental faculties. The great fundamental proposition which he seeks

to establish in this connection is, that between the mental faculties of man and the lower animals there is a difference of *degree* only, not of *kind*, and that, therefore (although the difference in degree is enormous), the former might be developed from the latter. In proof of his view, he enters into a long and detailed comparison of the mental faculties of the brutes and man, even in the teeth of his own admission, that "we really know very little about the minds of the lower animals."[1] He shews that the lower animals resemble us in the possession of certain instincts, and in their capacities for feeling pleasure or pain. They are capable also of feeling the same emotions which we feel.[2] Terror, suspicion, courage, bad temper and good temper, rage and revenge are exhibited by them as well as by man. They can even experience complex emotions. Dogs and monkeys shew jealousy when their master lavishes his affection on another object. Dogs and horses feel emulation, and can appreciate approbation or praise. A dog feels shame if he begs too often for food. Large dogs which submit to the snarling of little dogs shew magnanimity. Monkeys are sensitive to insult, and dislike being laughed at. Approaching the consideration of "the more intellectual emotions and faculties, which are very important, as forming the basis for the development of the higher mental powers," Mr Darwin shews that all animals feel wonder, and many curiosity.[3] "They sometimes suffer for this latter quality, as when the hunter plays antics, and so attracts them. I have witnessed this with deer, and so it is with the wary chamois, and some kinds of wild ducks." Monkeys, in especial, are remarkable for the strength of this feeling. The principle of imitation is very strong in man, and especially in man in a savage state. "Desor has remarked that no animal voluntarily imitates an action performed by man till in the ascending scale we come to monkeys, which are well known to be ridiculous mockers." Animals shew attention, and, in some cases, have powerful memories. They have, also, some imagination, as is shewn by the fact that they have vivid dreams. (We may remark in passing, however, that the assumption with regard to the dreams of animals, that they consist of "a long succession of vivid and connected ideas," seems

[1] Part II. p. 400.
[2] art I. p. 40, *et seq.*
[3] Part I. p. 58.

somewhat gratuitous, as not the slightest evidence in favour of it is adduced.)

Now, from the above facts the inference fairly follows, that in regard to faculties and feelings, which, in general, have never been supposed to be peculiar to man, an analogy more or less close exists between him and the brutes. It is true that the difference in degree is enormous in the similar exercises of the analogous faculties. The attention of a cat watching a mouse-hole, and the concentration of thought of a senior wrangler working out a Smith's Prize paper, are widely separated, and so also are the play of fancy of a Shakespeare, and the imagination of the dog that "hunts in dreams." But is there a difference of degree only in the contrasted cases? This is by no means certain. We believe that strong reasons may be urged for supposing that the intellectual faculties of man and the lower animals are analogous, and not similar; that is, that they fulfil the same function, like the wing of the bat and the wing of the bird, but all the while stand in different relations to the organism.[1] The great fallacy which pervades all Mr Darwin's reasoning on this question is the assumption that the same acts in us and in the lower animals proceed from the same motives, or are preceded by the same mental processes. The absurdity of such an assumption is surely its own refutation. We could not do what the bee does without a knowledge of geometry, or what the beaver does without a knowledge of mechanical science. But will any one assert that the bee is a geometrician, or that the beaver understands mechanics? A number of facts may be adduced which tend to prove that none of the mental faculties of man and the lower animals are precisely similar; for example, the remarkable potential capacity of the mental powers of the lowest savage when compared with those of the highest ape. Mr Darwin argues the probability of his view from the remarkable difference which exists in intellect and moral disposition between a civilised man and a savage, which at first sight is far wider than between the savage and the ape. A philosopher and a barbarian differ in mental and moral qualities more than a barbarian and a baboon. Are we then justified in inferring a greater difference between the latter than the former? But in what sense is there a difference in the first

[1] *Vide* "Christianity and Positivism," p. 357.

instance? Almost exclusively in regard to actual exercise of faculties, and not at all in regard to potential capacity. Mr Darwin proves this point for us. "The Fuegeans rank amongst the lowest barbarians, but I was continually struck with surprise how closely the three natives on board H.M.S. *Beagle*, who had lived for some years in England, and could talk a little English, resembled us in disposition and in most of our mental faculties."[1] But would any real mental development have been produced in an ape subjected to the action of the same moral and social forces as one of the savages? It is well known that there would have been none, and the different result of the action of the same forces proves the difference of the material acted upon.

In regard to the higher mental faculties, such as reason, self-consciousness, and the power of forming abstract and general ideas, the essential difference between man and the lower animals is most forcibly brought out. Mr Darwin claims for the lower animals the faculty of reason to some extent, but we believe that his arguments fail to establish his views. It is somewhat difficult to decide whether a germ of this faculty ought or ought not to be accorded to them, but the balance of evidence and opinion seems to decide in the negative. Many instances which are supposed to prove conclusively the existence of reason in brutes may be explained by the mere association of ideas, a very inferior process to reasoning. When animals have experienced pleasure or suffered pain, they are led to seek, or shun, certain actions by the mere law of coexistence. And, as Mr Darwin himself admits, it is very hard to distinguish between reason and instinct, and very easy to attribute to the former what is due to the latter. We believe that all the apparently high mental abilities which many of the lower animals shew in capturing their prey, or avoiding danger, depend on the exercise of acquired instincts. And even the convincing instance[2] given by Mr Darwin of the retriever dog, which, when unable to carry two wounded birds, contrary to all his training and instincts acquired in domestication, killed one of them and returned for it after carrying the other to his master, does not necessarily prove the existence of reason. The instinct of all beasts of prey tells them that wounded animals escape if they are not held, but that

[1] Part I. p. 34. [2] Part I. p. 48.

dead ones may be depended on to lie still, and hence they generally kill their prey at once. In the case of the retriever, this instinct to kill has been overcome by training, and by the hereditary transmission of qualities produced by culture in this class of dog. In the instance referred to by Mr Darwin, the dog could not hold both birds, and his dread of one escaping brought out the old instinct in full force.

Even those who claim the existence of the faculty of reason in the lower animals, admit that it exists in a very low form, and that it is impossible that it could ever reach a high form without the aid of articulate language. "A long train of thought can no more be carried on without the aid of words spoken or silent, than an elaborate calculation without the aid of figures or algebraical symbols." To account, then, for the development of the human reason from that of the ape, it is necessary that the origin of articulate language should be accounted for. Man, as Mr Darwin clearly shews, is not the only animal that can use language in a certain sense to convey to his fellows what is passing in his mind. Animals have different cries to express different feelings, and these excite similar feelings in animals of the same species. But articulate language is peculiar to man; and articulate language implies more than the mere power of articulation. Parrots can talk but it is man alone who possesses that power of connecting definite sounds with definite ideas, on which the development of his mental faculties so largely depends. How, then, did this power, of which no other animal possesses the most rudimentary trace, arise in man? To explain this, Mr Darwin postulates the existence of an ape-like creature "with mental powers more highly developed than any existing ape:"

"This early progenitor of man *probably* used his voice largely, as does one of the gibbon apes at the present day, in producing true musical cadences, that is, in singing; *we may conclude, from a widespread analogy,* that this power would have been especially exerted during the courtship of the sexes, serving to express various emotions, as love, jealousy, triumph, and serving as a challenge to their rivals. The imitation, by articulate sounds, of musical cries *might have given rise* to words expressive of various complex emotions. As bearing on the subject of imitation, the strong tendency in our nearest allies, the monkeys, in microcephalous idiots, and in the barbarous races of mankind, to imitate whatever they hear, deserves notice. 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 expected danger. And this would have been a first step in the formation of a language." (Part I. p. 56.)

The italics in the above extract are ours, and not Mr Darwin's, and we have introduced them to bring out forcibly the precise degree of probability which he can fairly claim for his conclusion. We may remark that there is no proof for the assertion, that monkeys understand human language in any other way than dogs do, that is, from its association with gestures and the expressions of the countenance. Nor has any instance of conduct similar to that attributed to the "wise ape-like animal" ever come under the notice of naturalists. Should any of our readers, however, have a tendency to attach importance to Mr Darwin's reasoning, we refer them to some valuable remarks on the subject in the last number of this *Review*.

Having thus accounted (certainly not to the satisfaction of any intelligent reader) for the origin of language, Mr Darwin goes on to point out the immense mental development which would result from its use, and to this he attributes the great disparity in mental power now seen between man and the brutes. Here he is very nearly, if not altogether, guilty of the fallacy of reasoning in a circle. It would seem as if he attributes the superior intellect of man to his use of language, and his use and invention of language to his superior intellect.[2] The essentials to the invention of a language are, according to the above extract, a certain amount of mental power, the power of singing to develop the voice, the habit of using song in love and war to express emotion, and the power of imitation. Now, as has been pointed out by more than one writer, all these conditions meet in certain birds, for example, in the mocking-bird. Why have not mocking-birds devised a language, and risen, if not as high in the scale as man, at least to a very considerable degree of mental development? It is hardly satisfactory to say that between them and the "wise ape-like animal," there was a wide intellectual difference. What made this difference?

The consideration of all the higher faculties, such as self-

[1] *British and Foreign Evangelical Review*, October 1871, p. 717.

[2] Compare, Part I. p. 54, and Part II. p. 391.

consciousness and the power of forming abstract and general ideas, Mr Darwin dismisses in a very summary manner:

"It would be useless to attempt discussing these high faculties which, according to several recent writers, make the sole and complete distinction between man and the brutes, for hardly two authors agree in their definitions. Such faculties could not have been fully developed in man until his mental powers had advanced to a high standard; and this implies the use of a perfect language. No one supposes that one of the lower animals reflects whence he comes, or whither he goes; what is death, or what is life, and so forth. But can we feel sure that an old dog with an excellent memory, and some power of imagination, as shewn by his dreams, never reflects on his past pleasures in the chase? and this would be a form of self-consciousness." (Part I. p. 62.)

To this we reply, that it is certainly no part of our duty to demonstrate what the dog, or any other animal, does *not* feel. It is for Mr Darwin to prove that rudimentary germs of feelings which are common to all mankind are possessed by some brutes. We can inherit nothing from our ancestors which they did not possess in one form or other, and we claim, if the theory of the origin of man's mental faculties by development be advanced, that some explanation be given us of how such powers as those of abstraction and generalisation could have arisen. Mr Darwin does not try to tell us, and does not even assert that he knows how to try. "Undoubtedly, it would have been very interesting to have traced the development of each separate faculty from the state in which it exists in the lower animals to that in which it exists in man, but neither my ability nor my knowledge permit the attempt."[1] Until the attempt is made, and made with some show of success, we do not see how we can be called upon to admit, even provisionally, Mr Darwin's hypothesis.

The chapter devoted to the comparison of the mental powers of man with those of the lower animals, concludes with an explanation of how, in Mr Darwin's opinion, the ideas of God and religion have originated. We believe that every reverently-minded scientific man will regret to read the statements here promulgated under the name, and with the apparent sanction, of Science. Mr Darwin repeatedly declares that his theory is not opposed to religion. Our reasons for strongly dissenting from this view we shall give before concluding. At present

[1] Part I. p. 160.

we shall merely state his opinions, as we shall refer to them again, and consider detailed comment upon them unnecessary.

Understanding by "religion" "the belief in unseen or spiritual agencies,"[1] Mr Darwin points out how this feeling, which is antecedent to the belief in one or more Gods, originated. As soon as man became possessed of the faculties of imagination, wonder, and curiosity, together with some power of reasoning, he would begin to speculate on his own existence. Dreams would give him the notion of spirits, "for savages do not readily distinguish between subjective and objective impressions. When a savage dreams, the figures which appear before him are believed to come from a distance and stand over him, or the soul of the dreamer goes out on its travels, and comes home with a remembrance of what it has seen." Natural phenomena would then be attributed to the possession by different objects of such a spirit as man possesses, and with some of these natural phenomena the idea of superhuman power is associated. "The belief in spiritual agencies would easily pass into the belief in one or more gods;" the natural result of the activity of man's mental faculties being to lead him "to believe in unseen spiritual agencies, then in fetishism, polytheism, and ultimately in monotheism." Finally, Mr Darwin gives it as his opinion that the feeling of religious devotion in man is the ultimate development of the feeling experienced by a dog towards its master, or a monkey to its beloved keeper.

The moral sense in man Mr Darwin considers to be a development of the social instincts which exist so strongly in many of the lower animals. The following passage contains his views on this important subject:

"The following proposition seems to me in a high degree probable—namely, that any animal whatever, endowed with well-marked social instincts, would inevitably acquire a moral sense or conscience as soon as its intellectual powers had become as well developed, or nearly as well developed, as in man. For, *firstly*, the social instincts lead an animal to take pleasure in the society of its fellows, to feel a certain amount of sympathy with them, and to perform various services for them. The services may be of a definite and evidently instinctive nature, or there may be only a wish and readiness, as with most of the higher social animals, to aid their fellows in certain general ways. But these feelings and services are by no means extended to all the individuals of the same

[1] Part I. p. 65.

species, only to those of the same association. *Secondly*, as soon as the mental faculties had become highly developed, images of all past actions and motives would be incessantly passing through the brain of each individual, and that feeling of dissatisfaction which invariably results, as we shall hereafter see, from any unsatisfied instinct, would arise, as often as it was perceived that the enduring, and always present, social instinct had yielded to some other instinct at the time stronger, but neither enduring in its nature, nor leaving behind it a very vivid impression. It is clear that many instinctive desires, such as that of hunger, are in their nature of short duration; and after being satisfied, are not vividly or readily recalled. *Thirdly*, after the power of language had been acquired, and the wishes of the members of the same community could be distinctly expressed, the common opinion how each member ought to act for the public good, would naturally become, to a large extent, the guide to action. But the social instincts would still give the impulse to act for the good of the community; this impulse being strengthened, directed, and sometimes even deflected by public opinion, the power of which rests, as we shall presently see, on instinctive sympathy. *Lastly*, habit in the individual would ultimately play a very important part in guiding the conduct of each member, for the social instincts and impulses, like all other instincts, would be greatly strengthened by habit, as would obedience to the wishes and judgment of the community." (Part I. p. 71.)

The first remark we have to make on these arguments is, that Mr Darwin assumes that the feelings experienced by man in relation to his fellows are a mere development of the gregariousness of the lower animals—that the social virtues of the one are a mere development of the social instincts of the other. This, we believe, is utterly incapable of proof. The old fallacy pervades Mr Darwin's arguments: the assumption that the same, or similar, acts in different creatures have the same mental antecedents—that the bee is a geometrician, and the beaver a mechanician. We hold that it is impossible to detect any germ of the sympathy, benevolence, and philanthropy which exist in man, in the social feelings of the lower animals. For instance, we have no evidence that the feeling of sympathy, as experienced by man, exists in the slightest degree in the lower animals. Gregarious animals have an instinct given them for their preservation, which leads each of them to act in certain ways which promote the common weal. If the herd or flock be attacked, all fight, and if danger threaten, any individual perceiving it will warn his companions. But not the slightest real sympathy with the sufferings of their fellows, or desire to promote their happiness when self-sacrifice (irrespective of attack or defence) is required, is seen amongst them

Any one of a flock of rooks in a stubble-field will warn his companions of the approach of the farmer with his gun; or any one of them will fight if the approach of a hawk seems to endanger the safety of some member of the community. But if the supply of grain be limited, not one of them will gobble the less that his companions may get a share. The warning given by the wary rook who first discovered the danger, or the attack led by the courageous rook on the feathered intruder, is a result of instinct, and deserves neither praise nor blame.

With regard to the evidence in favour of the existence of a feeling of sympathy in the lower animals which is introduced by way of illustrations, we confess that we do not see its force. "It must be called sympathy which leads a courageous dog to fly at any one who strikes his master, as he certainly will."[1] We do not think so. It is simply a development of that instinct which leads the wild dog to fight in defence of the troop with which he is associated. And with regard to the old Abyssinian baboon,[2] so much admired by Mr Darwin, and whom he would be proud to rank amongst his ancestors,[3] who came down from his place of safety on the rocks to rescue the young one which was surrounded by dogs, we do not see that anything more was involved than an exercise of that instinct which leads these creatures to act in concert for attack or defence. The parental instinct, however, may also have been involved. We believe the argument to be drawn from "almost the blackest fact in Natural History, that animals will expel a wounded companion from the herd, or gore and worry him to death,"[4] is quite as strong against the existence of this feeling as the facts quoted are in its favour. "Who can tell," says Mr Darwin, in the course of his argument, "what cows feel when they surround and stare intently on a dead, or dying companion?" Who indeed! but until some one can give us an approximate analysis of their feelings, we must decline to regard the social instincts of the lower animals as the germs from which the analogous feelings in the human race spring. We believe that all the higher social virtues which exist in man are a consequence of his possession of a moral sense, and not the cause of its existence; and we decline, therefore, to admit the

[1] Part I. p. 76.
[2] Part I. p. 75.
[3] Part II. p. 404.
[4] Part I. p. 76.

gratuitous assumption that they existed in a less developed form prior to the existence of anything deserving the name of a conscience. Even if Mr Darwin, postulating the existence in a less developed form of man's present social virtues, were able from them to deduce a satisfactory account of the growth of the moral sense, his conclusion would be valueless. He would be precisely in the position of a chemist, who, in searching for a substance, inadvertently allowed an unknown portion of the body sought to get into his crucibles, and whose work would, therefore, be labour in vain.

In fact, Mr Darwin's theory of morals, both in the principles on which it is made to rest, and in the final result arrived at, is eminently unsatisfactory. We have indicated the unproved assumption on which his theory rests, and we now come to consider the results which will follow, if we grant his premises. On Mr Darwin's theory a moral act is an act of the purest selfishness. Our moral sense is our most imperious instinct, and thus to perform a moral act is really to follow the most permanently powerful impulse to which we are subjected. That there is no escaping from this conclusion we shall prove by Mr Darwin's own words. The moral sense, he admits, is "summed up in that short but imperious word '*ought*,' so full of high significance." And what does this word "ought" imply?

"The imperious word *ought* seems merely to imply the consciousness of the existence of a persistent instinct, either innate or partly acquired, serving us as a guide, though liable to be disobeyed. We hardly use the word *ought* in a metaphorical sense when we say hounds ought to hunt, pointers to point, and retrievers to retrieve their game. If they fail thus to act, they fail in their duty, and act wrongly." (Part I. p. 92.)

Again, in another passage, he says:

"Any instinct which is permanently stronger, or more enduring than another, gives rise to a feeling which we express by saying that it ought to be obeyed. A pointer dog, if able to reflect on his past conduct, would say to himself (as indeed we say of him), I ought to have pointed at that hare, and not have yielded to the passing temptation of springing on and hunting it." (Part II. p. 392.)

Now we believe the reference to the pointer dog in the above extracts clearly proves what we have asserted with regard to Mr Darwin's theory. Owing to special training for generations of dogs, and the transmission of qualities by heredity, the acquired instinct of the pointer to point game has

mastered his natural tendency to chase it. This is with him the dominant instinct, though it may at times be overcome by some other excited against it by means of a vivid impression. To resist this and obey the dominant instinct constitutes, according to Mr Darwin, a moral act. Of course, to those who adopt the selfish system of morals, these views will present no difficulty. To us it seems as if Mr Darwin had not so much as weighed what is involved in our moral perceptions, judgments, and sentiments, for he distinctly affirms (Part I. p. 73), that if the human race had been developed under different conditions, acts which are now wrong might have been right, and *vice versa*. The imperious word *ought*, we hold, implies more than a tendency to obey the dominant instinct of our nature. "I ought to have done such and such a thing," man can reflect, "because the God-implanted sense of right within me tells me it was right." No germ of such a feeling exists in the most sagacious of the lower animals. Mr Darwin's theory, which fails to account for the origin of man's bodily frame by development, and fails still more conspicuously to account for the origin of his mental powers, utterly breaks down when applied to explain the existence of conscience, and our ideas of right and wrong. Regarding it in this application, we are tempted to borrow the language used by one of our first scientific men in speaking of Materialism, and designate it as "pernicious nonsense."[1] We may remark that Mr Wallace pointedly expresses his dissent from Mr Darwin's views on the moral sense; and coming from such a distinguished student of Anthropology, the following statement is worthy of the attention of Utilitarians in general, and of Mr Darwin in particular:

"Although the *practice* of benevolence, honesty, or truth, may have been *useful* to the tribe possessing these virtues, that does not at all account for the peculiar *sanctity* attached to actions which each tribe considers right and moral as compared with the very different feelings with which they regard what is merely *useful*. The utilitarian hypothesis (which is the theory of natural selection applied to the mind) seems inadequate to account for the development of the moral sense."[2]

Mr Darwin having set himself the task of proving that man, with all his mental powers and moral capacities, was produced by development from the ape, was bound to go

[1] Professor Tait, "British Association Address," 1871.

[2] "Contributions to the Theory of Natural Selection," p. 352.

through with it. But although he has brought an almost unrivalled knowledge of Natural History, matured experience, and painstaking industry to his task, he has failed most signally. That he himself feels the unsatisfactory nature of his reasoning in many instances, will be evident from the frequent occurrence of "probably," and "it is probable," in his conclusions. We freely admit what is frequently urged by those who recoil from the consequences of Darwinism, but fear lest an unwilling consent to its truth should yet be wrung from them, that Mr Darwin has a good deal to say in favour of his views. Of course he has a good deal to say in their favour, or the "Descent of Man" would never have been published. But science does not, and cannot, accept any hypothesis merely because a good deal can be said in its behalf. It considers what can be said *against* it as well, and the facts which seem opposed to it are those on which the attention should chiefly be fixed. If even one fact be discovered which is utterly inconsistent with its acceptance, its doom is sealed. When a scientific hypothesis is put on its trial, evidence as to previous good character must go for nothing. Considering then the arguments which can be urged *against* Mr Darwin's theory, we must conclude that it is scientifically untenable.

But how, it may be objected, do you account for the fact that this theory is held by many men of great eminence in science? We reply that, in the first place, the number of scientific men who hold the theory of evolution as Mr Darwin states it, constitute but a small minority of our leaders in scientific thought. There are elements of truth in Mr Darwin's theory, both as applied to the lower animals and man, and many of our scientific men who go no further than the admission of this fact are credited with being Darwinians. But admitting, as we must, that this theory is held by men of pure and earnest lives, clear intellect, and high attainments, we think their conduct can be explained. In the first place, the arguments adduced by Mr Darwin to account for the origin by development of man's body, intellect, and moral nature, contain important elements of some rather neglected truths. There is a very close analogy between man's bodily frame and that of the lower animals, for man is an animal. There are striking analogies between some of the mental faculties of man and

those of the brutes, for many of man's instincts, appetites, and passions resemble theirs. And it is true that many of the highest developments of our moral nature are closely connected with our social feelings, and are called forth by the contemplation of our relations to our fellow men. But after all, when we consider the differences which exist between man and the brutes, what do the resemblances teach us? Man, closely resembling the lower animals at first sight, is really separated from them by an impassable gulf. Do we not thence learn the importance of that indefinite something which makes the difference? But it is obvious that those who, influenced by previous training and modes of thought, look at the question only from the point of view of Natural History, must fail to appreciate the force of the arguments drawn from the existence of those mental and moral qualities which are man's exclusive birthright. And prepossessed in favour of the theory of evolution, and not seeing the force of the arguments raised by mental science against its acceptance, they are disposed to over-estimate immensely the points of agreement between man and the lower animals, and to neglect the points of difference. Hence has arisen what we believe to be the grave scientific error of Mr Darwin and his followers.

The bearing of Mr Darwin's theory on Religion has been differently estimated. He himself declares repeatedly that it does not militate against our current religious beliefs; and an admiring Darwinian considers that he has proved that it "neither shuts out God, degrades our conscience, checks our belief in the power of communion with the divine mind, as far as our faculties will permit, nor diminishes our hope of immortality."[1] In spite, however, of all that Mr Darwin and his friends have told us, we do not see how to reconcile with our Christian faith the hypothesis that man, with all his powers and capacities, is only a higher sort of brute; that our moral sense is no better than an instinct like that which rules the beaver or the bee; that He whom we have been accustomed to regard as the Creator of all things, is a creature of our imagination; and that our religious ideas are a development from the dreams and fears of anthropomorphous apes. On the contrary, we believe that the sharpest antagonism exists between religion and morals as embodied in Christian thought,

[1] *Macmillan's Magazine*, May 1871, p. 51.

and as deducible from the teachings of Darwinism. All great thinkers are agreed that the practical value of a religion depends very much on the conception of God which it gives us. Hegel says that "the people who have a bad conception of God have also a bad state, bad government, and bad laws." What conception of God do we get from Darwinism? It seems to us that between Mr Darwin and M. Comte there is nothing to choose in this respect, except that the latter is the more logical of the two in his final conclusion, and denies to the product of our imagination that objective reality which the former accords. Both agree in asserting that man was originally destitute of the idea of God, and of anything in the shape of religion. Both assert that his earliest faith arose from gross ignorance of natural phenomena, frightful dreams, and vague terrors. And both account for the origin of the idea of one God as a natural result of the growth and activity of man's mental faculties. Mr Darwin admits that the greatest thinkers have believed in the existence of a God. M. Comte would have some hesitation in admitting a man to be a great thinker who held any such belief. But after all, we cannot understand how, on the former's theory, our belief in a God, and our religious feelings, can be regarded as anything but delusions of the intellect, developed through the action of our mental powers by some process of natural selection, because they tend to promote the general good of society.

Mr Darwin anticipates the objection to his theory, that it is inconsistent with a belief in the immortality of the soul, and attempts to answer it:

> "Few persons feel any anxiety from the impossibility of determining at what precise period in the development of the individual, from the first trace of the minute germinal vesicle to the child either before or after birth, man becomes an immortal being, and there is no greater cause for anxiety, because the period in the gradually ascending organic scale cannot possibly be determined." (Part II. p. 395.)

But it is utterly inconsistent with Darwinism to admit that there was at any period since the origin of the first Ascidian, a distinct creative act on the part of the Creator, a transformation of a soulless being into an immortal creature. We believe the soul of man to be God-given, though we cannot determine in the case of each individual when the gift is received; and we hold that it is something more than a

mere natural development of the forces potential in the microscopic germ. But Darwinians must, in consistency, hold the soul to be a mere gradual development of the powers and capacities of the lower animals. There must have been in the anthropoid ape something that was almost a soul; then, in the lapse of generations, an imperfectly developed soul; and then, finally, the fully developed soul as existing in man in the present day. In so far as the doctrine of a future life is concerned, we prefer the Christianity of Plato to that of Mr Darwin.

In concluding our notice of Mr Darwin's book, we may state the opinion we have formed of it after a careful perusal. It is a most valuable storehouse of facts in natural history, shewing almost unrivalled acquirements in this branch of science, and is a monument of painstaking industry. And it is free from the offensive irreverence with regard to sacred things which disfigures the writings of Vogt, and Büchner, and even Häckel. But Mr Darwin is as remarkable for his rash use of his wealth of facts, as for his skill and success in their acquisition. Imperfect inductions and hasty generalisations follow each other in rapid succession, and never before have such sweeping conclusions been drawn from such slender premises in a scientific book. Were the reasoning occasionally employed advanced by a theologian instead of a man of science, short shrift and scant mercy would be granted to it by Darwinians. Mr Darwin is frequently guilty of the fallacy of assuming, as demonstrated truths, in one portion of his book, statements which he has only claimed to be "probable," or "highly probable," on their first announcement in a preceding portion. His work abounds with unproved assertions, quite out of place in a scientific treatise, and contains occasional allusions to those who differ from him which are the reverse of courteous, and glorifications of those who agree with him which are in questionable taste. For example, as instances of his dogmatic assertions, he tells us that the instinct of sympathy in the lower animals "no doubt was originally acquired, like all the other social instincts, through natural selection" (Part I. p. 164). Again, speaking of the unfilled-up gap which exists between man and the nearest apes, he says, "But we have every reason to believe that breaks in the series are simply the results of

many forms having become extinct" (Part I. p. 187). And again, in referring to the conclusion at which he has arrived with regard to man's origin, he says, "The grounds on which this conclusion rests will never be shaken." As an instance of language towards opponents which is unnecessarily energetic, we may mention the reference to those who dissent from the inferences which he draws from the occasional abnormal development of the canine teeth in man: "He who rejects with scorn the belief that the shape of his own canines, and their occasional great development in other men, are due to our early progenitors having been provided with these formidable weapons, will probably reveal by sneering the line of his descent" (Part I. p. 127). We are also told, that "unless we wilfully close our eyes, we may recognise our parentage" (Part I. p. 213), and that "he who is not content to look like a savage at the phenomena of nature as disconnected, cannot any longer believe that man is the work of a separate act of creation" (Part II. p. 386). Charges of wilful blindness and savagism against those who differ from him, are not becoming in a scientific man. The habit, too, of referring in terms of extravagant laudation to those who agree with him, while omitting to pay any tribute of respect to those of at least equal abilities and attainments who hold antagonistic views, is most objectionable. We hear of "our great philosopher, Mr Herbert Spencer," "our great anatomist and philosopher, Professor Huxley," and of "the remarkable work of Mr Galton," whilst Professor Owen is quoted without any acknowledgment of his abilities. Finally, we cannot help thinking that Mr Darwin shews at times a readiness to accept, without questioning, assertions and anecdotes that seem confirmatory of his views, which is very inconsistent with the doctrine of his admirer (and admired) Professor Huxley, that for the seeker after natural knowledge "scepticism is the highest of duties—blind faith the one unpardonable sin."[1] We are strongly of opinion that if Mr Darwin shewed in some cases more scientific scepticism, his theories would furnish less basis for religious doubt.

On the whole, however, in the interests of both Science and Religion, we welcome the appearance of the "Descent of Man." It enriches science by a vast number of valuable facts, and it will stimulate inquiry with regard to the theory of Evolution

[1] "Lay Sermons," p. 18.

which may be expected to yield important results. We may reasonably hope that the true limits of this theory in biological science will shortly be ascertained, and we are confident that the Development hypothesis will not be found, when rightly understood, to shut out God from His works. That Mr Darwin's book is calculated to unsettle faith in the case of half-educated people, we admit. It is a somewhat expensive work, and many people make their acquaintance with it through the medium of extracts given in the pages of our periodical literature. The extracted passages are generally those which contain startling assertions, and ordinary readers assume that assertions so positive must be supported by arguments of weight. The fallaciousness of this supposition will be exposed by a reference to the book itself; and without any special knowledge of Natural Science an intelligent man will be able to detect the inconclusiveness of its reasoning. To any one who finds his faith shaken by the theories of Darwinism, we recommend a brief study of the true methods of scientific inquiry, and then a careful perusal of the "Descent of Man."

J. R. LEEBODY.