Letters to the Editor.

MR HUXLEY'S FANCIES ABOUT MAN AND APES.

SIR,—Mr Huxley has been here asking the confiding members of the Philosophical Institution to believe him that we are probably descended from apes. On the same platform, some years ago, he had his laugh at some nonsense Paley had written about the spleen, and then drew the logical and profound conclusion that Paley's argument (that design proves a designer, that a watch proves a watchmaker) is all wrong, upset by the demonstration of unity of plan! By a process, doubtless, of "natural selection," the smart London lecturer has gone on developing since, and we are now told that there is no designed plan at all, but that one wonderful egg has done the whole business. The Creator made A, or A made itself, somehow, and then made B, and B made C, and so on to Z, which is man. Or, to give it in the nursery version—this is the oyster that made the fly, that made the frog, that made the cock, that made the dog, that made the ape, that made the man, that lives in the house that Jack (Darwin) built.

Mr Huxley's argument, if argument it can be called, is, that there being a greater bodily difference between the lower, and the higher apes than between the latter and man, *therefore* the body of man has probably sprung from the apes, wherever his mind may have come from. As Mr Huxley told us himself, his facts (that is, the facts he chose to mention) are in no way new; but what of the inference? The frog has more points of resemblance to the dog than to the oyster, therefore dogs are probably descended from frogs; the dog is nearer to man than to the frog, therefore man has probably had his day as a dog, and so on says Darwin, essentially endorsed by Huxley. When Mr Huxley showed how very closely the early ovum of the frog, dog, and man resemble each other, it possibly did not occur to him that the natural and right conclusion drawn by his ingenuous audience was, that structure of itself proves nothing as to his theory, and may mislead, as the ovum of the said frog never brings forth a dog or a man, but always a little tadpole, which stops when it has attained the image of its papa. A few plants, and some poor pigeons, dogs, and other tamed beasts, may be made to vary their shapes and habits a little, and *therefore* dogs may be converted into sheep, mice into cats! The tendency of domesticated animals to return to their original condition, the infertility of species with other species, and all the other facts, anatomical and physiological, which lead nearly all unbiassed men of science to hold the original distinction of species, must, of course, be ignored. It has pleased the Creator to make all vertebrate animals on a plan, mostly in a graduated series—ladder-like, but with steps at various distances—and some two or three crotchety would-be philosophers infer from this that one step has produced the others, and that, accordingly, the steps were much closer to each other originally, the so-called "missing links" being somewhere hidden, but unfortunately not yet found. Yes, the want of the "missing" links is a very unhappy circumstance; and yet, if they exist, why should they be missing when those both above and below them are found—for the bones of the link-animals must be in as good preservation, and ought to be as easily found, as those of others which are found, especially the "missing links" near man, as he lies quite superficially in the crust of the earth? The Institution is asked to seek for them we readily grant, asking only in return that until then, and until, besides, some sort of proof has been given that the one has grown from the other, science may not be discredited before the public, and outraged among its cultivators, by even the utterance of so baseless a theory. If the missing links are not found in the "Arabian Nights," the seekers of this "mare's nest" are most likely to succeed by digging in the grey strata of the Darwinian brain.

Then, as to Mr Huxley's comparison between the higher apes and man, viewed even as an anatomical question, he spoke of the points of resemblance, but what of the differences, to which he might have devoted half-a-dozen lectures, if his theory had not blinded him, or had a more accurate study of the specific structure of man enabled him to appreciate them. Every anatomist who understands the natural condition of that human characteristic, the big-toe, before the shoe has pinched it, would recognise Mr Huxley's representation of it to be unorthodox in every sense of the term. And what are anatomists to think of a lecturer who could leave on his audience the impression that the differences between the head and teeth of the gorilla and man are not, after all, so very great, with the gorilla's small cranial capacity, its ferocious muzzle and teeth, and great orbital margins, sagittal ridge, and occipital crest all starting him in the face. Besides the brain and mind questions, the unsophisticated fact is that the human figure is built for the erect posture, man alone, among mammals, being firm and serious on two feet, or on one, his hands being thus set free for human work, while the apes are built for four-handed action on the trees, where they are at home; and that the common type of vertebrate skeleton has its special characters in each; those of man, which are best known, never having essentially varied from the oldest known skeleton down to the most modern, whether savage or civilised. With a skeleton like the gorilla's, the lecturer would in a few minutes have required to go down upon all fours, or get up a tree, which would be rather a novel platform for a Philosophical Institution.

But, different as that is, it is not the mere bodily form or structure which makes the one a man and the other a monkey. In fact, the liker we can show them to be to us in their animal framework the more unlike we become that they are only apes; that, as they are, so has it, the ape, although he has hands as good, and stomach as perfect, and senses as acute as ours, has certainly hitherto taken no surprising part in the political revolutions of the earth, has done nothing for poetry, painting, music, or science, and is still as unable to read and write as persons of honour and quality were in the time of Queen Elizabeth! It is not a little entertaining and instructive to notice that those who, contrary to the conditions of most of our scientific ethnologists, would not admit that a black and a white man could be descended from common parents, have suddenly wheeled round to the fancy that mankind may have sprung from apes; so true is it that the wish is often father to the thought. It is likewise a gratuitous assumption to speak of man's primal condition as that of the savage. There is nothing either in ethnological science or in history incompatible with the view that the savage is a degraded man, or to support the view that man is an elevated savage. I do not take up the argument from a Scriptural point of view. Error in science may always be, and is, best met by science, and vanquished in the ring of its own choosing, within which truth and falsehood may be safely left to grapple.—I am, &c.

SCALPEL.

THE SCOTSMAN

EDINBURGH, THURSDAY, January 23, 1862.

DARWIN AND HUXLEY *v.* THEIR CRITICS.

Edinburgh, January 21, 1862.

SIR,—Your correspondent "Scalpel" has shown a very narrow spirit in his letter to you of the 18th, on Professor Huxley's opinions, and Mr Darwin's speculations on the origin of species. I need not say that Darwin's theory is mis-stated by the writer, as any one who has studied his book with a mind that has not already prejudged it must see how completely the flippant style of your correspondent fails to indicate the true opinions of the naturalist. "Scalpel" says, "a few plants and some poor pigeons, dogs, and other tame beasts may be made to vary their shape a little, and, therefore, dogs may be converted into sheep, mice into cats." This appears to be given us as a condensed view of Mr Darwin's theory, only laid down in a clearer manner from having passed through the brain of so sensible a man as "Scalpel." Compare such dishonest misrepresentation with the grand principles laid down by the philosopher himself as the basis of his theory—principles that have never yet been seriously denied, and, yet, which are seldom kept in view in discussing its merits. These are—variation, inheritance, and the struggle for life. An animal produces offspring differing in some slight degree from the parents. If the peculiarity is of any value to the animal, it necessarily gains some advantage over its parents, and the law of inheritance provides for the continuance of that advantage in its descendants. From the rapidity with which all animals increase in numbers, each is brought into direct competition with each for food and the other necessaries of its being. The only possible result is that the individual possessing most advantages, however minute these may be, triumphs over the weaker neighbour, and multiplies at its expense. Its advantages are inherited by its descendants, and after a time the variety is firmly established. In the course of time, some unknown cause in the organisation of an individual causes another divergence of character, and the same process is repeated, and so on till species through infinitely minute shades of difference gradually produce varieties. These varieties become more and more removed from the parent species till at length we have a new one. Now, all naturalists agree that each of these great laws is at work in the world. All agree that these are varieties, that varieties are linear descendants from species; but here the agreement ends. The Darwinian, carrying out his principles, says that varieties go on producing varieties till the difference becomes specific. The believer in the fixity of species affirms that varieties up to a certain point of resemblance (or divergence) are produced by natural means, but beyond that no powers in nature are able to carry them. There they remain fixed. And when a new species is required, God, by a direct exertion of creative power, brings it into existence. When pressed for his reasons for an assertion so illogical and so void of all evidence, he takes refuge in religion, and begins to declaim on the danger to revealed truth of holding that species can be produced by laws of nature; for is not man an animal, and, as such, subservient to the same laws, and having a common origin with all other created things? When men have gone the length of believing such sophistries, it is said moral responsibility and religious duties vanish like a dream, for are we not all the slaves of "beautiful necessity?" As if the consciousness of heavenly aspirations were not proof sufficient that man's is a different sphere of duties from that of the brutes. Yet such a method of reasoning lies its side of truth also, for it reminds us that as there are unvarying laws in the physical world, so there are unchanging ones in the moral and spiritual; that if man attempts to act discordantly to these, the results are in the one case death natural, in the other death spiritual.

"Scalpel" talks of Professor Huxley in a manner that is quite consistent with the general tone of ridicule and prejudice pervading his letter. Professor Huxley is rapidly attaining, if he has not already attained, a position at the head of our scientific men. His reputation, too, is founded, not upon any theories, but upon valuable positive achievements in science. Nay, so well established is his character as a naturalist, that he can afford to brave the buffoonery of such men as "Scalpel," and the inherent prejudices existing in man's mind against theories that appear to place his superiority on a more questionable basis.

Your correspondent says—"Mr Huxley's argument, if argument it can be called, is, that there being a greater bodily difference between the lower and the higher apes than between the latter and man, *therefore* the higher apes than between the latter and man, *therefore* the body of man has probably sprung from the apes, wherever his mind may have come from." This is rather too strongly expressed to be quite a correct statement of Mr Huxley's argument. The naturalist rather endeavours to lessen, in our minds, in a perfectly justifiable way, the striking difference between man and even the highest apes. To do this, he calls away our attention from the contrast—which, when viewed alone, is apt to be magnified in our eyes—and brings before us another contrast, equally or even more striking. The four manlike apes are by all naturalists united in the same order with the lower quadrumana; but the anatomical structure and habits of the latter are in as great contrast to those of the former as these are to those of man in his lowest forms. Therefore, naturalists are not unbiassed when they reiterate so positively the impassable gap that separates man from the anthropoid apes. Their virulent assertion is even suspicious, and seems to imply a doubt of the grounds on which their dogma rests. Such resemblances and contrasts, of course, do not amount to proofs, but may surely be allowed to make the probabilities more evenly balanced.—I am, &c.

AMOR SCIENTIÆ.

THE SCOTSMAN

DECEMBER 4, 1866

DR DUNS ON THE UNITY AND ANTIQUITY OF THE HUMAN RACE.

YESTERDAY afternoon, the Rev. Dr John Duns, F.R.S.E., Lecturer on Natural Science in the Free Church College, Edinburgh, delivered the first of a series of six lectures on "The Unity and Antiquity of the Human Race," in the saloon, 5 St Andrew Square. The lectures have been undertaken by Dr Duns, in compliance with the following requisition, signed by Sir J. Y. Simpson, M.D., Rev. Dr Duff, Rev. Principal Candlish, Rev. T. D. K. Drummond, Rev. Dr George Johnston, Rev. A. A. Millar, of the City Mission, and Messrs James Cunningham, Queen Street; David Dickson, George Square; James Wright, Royal Bank; W. J. Duncan, National Bank; J. H. Balfour, Inverleith Row; A. Keith Johnston, L.L.D.; Hugh Rose, Hillside Crescent; and Charles Anderson, Royal Terrace:—"We, the subscribers, having reason to believe that you have given much attention to the natural history of man, and being satisfied of the importance of the subject, and the deep interest it has awakened in the public mind, request you will deliver a short course of lectures on anthropology during the ensuing winter—having special reference to the bearing of recent scientific discoveries on the question of the unity and antiquity of the human race." The room was well filled, the chair being occupied by the Rev. Dr Duff; and among the gentleman present were the Rev. Principal Candlish, Professors Rainy and Bantherman, Rev. Dr G. Johnston, Rev. Sir Henry Moncreiff, Rev. Messrs D. T. K. Drummond, Moody-Stuart, and M'Donald of North Leith, Sir David Dundas, Mr James Cunningham, &c.

The CHAIRMAN, in introducing the lecturer, said—I wish to express my sense of the vast and paramount importance of the course of lectures on which we are now to enter. We live in a day of trouble; and it won't do for us, as intelligent and enlightened Christians, with regard to these matters of speculation that are springing up in all directions, to act the part of the ostrich—to hide our heads in a bush and think, because we see nothing, nobody sees us. These great generic subjects are to be brought before us—the antiquity of man, and the unity of the race. You all know how certain cultivators of modern science—alas! that science should be in their hands nothing better than science falsely so called—have alleged, or pretended to allege, on grounds of what they suppose to be scientific evidence, but which is nothing better than guess, or conjecture, or random hypothesis, that the origin of

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man must be thrown back into an immeasurable antiquity—that, instead of deriving his being direct from the hands of the great Creator by an act of creation, they are to go back to immeasurable ages, and there find that, in common with all vegetable and other organisations, man is to trace his origin from a primordial germ. I need not tell you that between this guess, or conjecture, or unsubstantiated hypothesis of the cultivators of science and the statements of the Bible there is an irreconcilable discrepancy, and we have all an interest in seeing the subject cleared up. The Bible statement is that all mankind derive their origin from a common ancestry. "God hath made of one blood all the families of the earth." Other cultivators of science come forward, and, besides throwing back the origin of man into an immeasurable antiquity, tell us that there are such varieties of race on earth, that we must believe that these different races have sprung from different originals, and therefore they have all separate and independent centres of creation, and so forth. Now, the economy of redemption is based upon the belief that we are descended from a common ancestor—that in that common ancestor we have all sinned, and from him derive a nature that is tinctured with sin. If you, then, destroy this Scripture doctrine of the origin of man from one common ancestor, you thereby practically, virtually nullify the grand Scripture doctrine of original sin, and the glorious scheme of redemption based thereon. We have all a profound interest, therefore, in seeing these matters cleared up. How are they to be cleared up? Simply by referring to the sciences on which they are pretendedly based, by a more profound study of these sciences, by an ampler collection of facts—properly ascertained and properly authenticated facts—on which, by the rules of the Baconian philosophy, we may frame certain conclusions that shall be stable. It is, then, to have all these matters properly expliciated that we have met here. And allow me to say, in conclusion, that we ought to thank God for having raised up amongst us one like Professor Dunn, who, with a profound reverence for the God of creation and the God of redemption, and equally conversant with the mysteries of creation and the mysteries of redemption—(hear, hear)—comes forward here to prove to us that between the revelations of the volume of creation on the one hand and the revelations of the volume of inspiration on the other there is not only no irreconcilable discrepancy but a blessed, mutual, and glorious harmony that will be inseparable. (Hear, hear, and applause.)

Dr Dunn, who was received with applause, said that the subject of the unity and antiquity of the human race was one of great importance. It was surrounded with difficulties. It held at present a higher place in the [illegible] of scientific workers than any other subject in the wide domain which they [illegible] ; and touching as it did the written revelation of God to man on vital points, theologians acknowledged its weight, while many thoughtful Christians outside of both classes, longed to know more of its scientific and scriptural bearings than current literature unfolded. It had no doubt been fully handled from one point of view in scientific papers, and been discussed in learned societies, but in language which, for the most part, must be as an unknown tongue to general readers, while facts illustrative were referred to whose bearings were intelligible to scientific men alone. The sounds of this strife had reached the public ear, and it was not unfrequently asked what was the meaning of this? What was the real and scientific value of these facts which men allege to be in direct opposition to the Word of God? In these lectures he proposed to answer these questions. They raise topics whose delicacy and difficulty must be acknowledged by all. The field was wide; but he hoped to be able to lay hold of salient points, and to set these in lights which should indicate distinctly the nature and scope of the whole question. In the outset (he remarked), I need scarcely say that the matter is to be dealt with from the standing point of belief in the Bible. "Then the treatment of the subject is to one-sided?" Not necessarily. If I do no more than oppose the statements of the Bible with facts of science and appeal to them as something entitled to override or to set aside these, the discussion, it must be confessed, would be partial. This would, moreover, be as insulting to science as it is unworthy of faith. (Hear, hear.) But must I lay claim to the position of scepticism as an evidence that in discussing scientific questions I have got quit of bias and am purged from partial counsel? Alas for truth, she has fled in every page of her history if in her encounters with error and unbelief she has ever met scepticism itself free from bias. However, those who carry a competent knowledge of systematic theology with them into scientific pursuits, and who refuse to give up all that is dearest to them until they have with some thoroughness sifted new claims, must bear to be reckoned the victims of an evil bias, the subjects of a strong prejudice. Yet there will be blame at the door of all honest workers if they shrink from their profession of attachment to revealed truth in order to get praise from some whose praise may be the worst blame. Dr Dunn then went on to refer to the debt which science owes to theology, maintaining that the natural sciences had been more indebted for their progress and their influence over the public mind to theologians than to any other class in the community. What, he asked, would geology have been had not Conybeare, Sedgwick, and Buckland worked to such good purpose? Or look at palæontology, will not Hitchcock's work on Connecticut "fossil footprints" bear favourable comparison with any palæontological work of the time? Or where will you find the equal of Fleming among the Scottish zoologists of the present day? Yet these men were theologians—had been ordained over Christian congregations, and had preached to others the unsearchable riches of Christ? If this training influenced their studies, and threw its peculiar spell over their pursuits, we cannot help wishing that, considering the rarity, all our present workers in the same field [illegible] were, like them, bitten by the theological [illegible]. It is really time that the Church leave her timid attitude of apology, and proclaim that it stands both to reason and to common sense that they who are nearest to the Creator are furthest from bias, and other attainments being equal, the most reliable interpreters of the Creator's works. But if we are thus to carry religious beliefs, and a firm conviction that the Bible is the Word of God with us into scientific inquiries, let it not for a moment be imagined that it is possible for any man to destroy any one tenth of science. All truth is eternal, whether you meet with it in the Word of God or in the world which He has created. These equally form parts of one great revelation. It is indeed granted that many weak and foolish things have been said of science by earnest Christian men, just as the expressions regarding the Bible, and God who revealed it, by men of science have fully as often been weak and foolish. But are we on this account to harbour the imagination that science and Scripture are antagonistic? The lecturer proceeded to state that as man had both an immortal spirit and a mortal body, these stood in so close relations to one another, that it was impossible to have even a thorough scientific knowledge of the material organs of man without some knowledge of the spiritual nature which they served, and whose functions were exercised through them. The student of anthropology discovered at the outset that, in any attempt to understand the natural history of man, he must take mind into account; but the Bible professed to enlighten him here. It was a Book in the literature of his subject, which, philosophically even, he could not ignore, and yet be an impartial man of science. Having thus made their own stand-point clear, he went on to state the point of view of the other side, illustrating it by extracts from the works of several eminent scientific men. In one of these extracts it was stated that science "would become the foundation of a more perfect morality;" and the lecturer stated that the morality referred to was one more perfect than that in the Bible. After some remarks upon the point of view taken in these extracts, which was that scientific discoveries were antagonistic to the Bible, Dr Dunn said—"I must now ask your attention to the present state of the question as to the unity and the antiquity of the human race. Two theories stand closely related to it. I mean the theory of a life-originating force in nature, and that of the power of one form of life to pass, in the course of ages, into another wholly unlike it—the theory of spontaneous generation and that of transmutation of species." In reviewing these, an appeal was made to the present scheme of systematic classification, as suggesting the evidence of several creative plans in nature; and the animal scheme of this epoch was compared with that of geologic time. After giving examples from geologic time, suggestive of breaks in the upward creative march, he added, "I hold that the disappearance, at one point and another, of multitudes of generic forms warrants the inference that such breaks have occurred, and that the appearance, not of new genera only, but even of new types of life, at certain comparatively well defined periods, justifies the conclusion that these were the results of new forth-puttings of creative power—word, in a word, new creations." The objections to these positions were referred to at considerable length. Noticing next the theory of development and Darwin's theory, the lecturer said the natural history of man had got to be intimately associated with theories of an inherent life-originating force in nature, and of transmutation of species. The former was the theory of development, the latter Darwin's theory; though, indeed, the non-permanent character of species was common to both. According, also, to either theory, man was no more than the last link of a chain whose life-beginning was a primary cell somehow originating, perhaps, about 200 millions of years ago, and now developed by a process of what had been gradually called "adaptive modifications of pre-existing structures;" and this kind of thing was now asked to receive as science! After referring to the change which had taken place of late in the development theory, the lecturer said he should not shrink from calling it by its right name, and asked why they should be charged with a want of charity, and with being the victims of theological bias in saying that it was downright, dark, dreary atheism. (Hear, hear, and applause.) Human ingenuity had never been able to adduce one fact in support of this wretched theory. It was trifling with human intelligence to propose it. It was an outrage on common sense to ask us to ponder it. It appalled. He admitted, however, that Darwinianism presented its view which could not be so summarily dismissed. This was chiefly due, he said, to the great ability and apparent candour of Mr Darwin himself, and partly to the fact that it starts from a point of view far in advance of the development theory. The lecturer proceeded to discuss at some length Mr Darwin's views, and, in doing so, he said he put biblical considerations aside, and wished to look at them from the purely scientific standing point. After a full statement of facts held to be directly opposed to the theory, Dr Dunn said, "It would appear that Ben Jonson's 'Subtle' never dies. Nature, says Subtile in the 'Alchemist,'

> 'Nature doth beget the imperfect, then
> Proceeds she to the perfect.
> Besides what doth not she effect in daily practice
> Art can beget bees, hornets, beetles, wasps,
> Out of the carcasses and dung of creatures:
> Yea, serpigos from an herb being rightly placed.'"

Thus old errors repeat themselves. And now they meet us, not in Jonson's crazy Saxon, but under the guise of such expressions as "adaptive modifications of previously existing structures," "transmutation of species," "equivocal generation," "spontaneous evolution of the hitherto non-realised," "the individualisation of tissues previously organised," "transitional links in normal specific development," and the like. The wonder is, that there are people who are caught by such trash, under the name of science. (Hear, hear, and applause.) Some seem to think that because they can point to certain modifications in external form, which appear to bring distantly related animals near to each other, they have illustrations of the action of a principle of adaptive modification underlying and explaining that variety of specific forms which we see around us. Suppose an illustration be taken from birds. Yet have the web-footed duck, the lobed-feet of the grebe, the long, narrow, marginate toes of the water-hen, the free, flexible toes of the perching birds, the prehensile feet of many of the climbers, and the grasping talons of the birds of prey. By a series of modifications, it is alleged, all these may have been formed from one type of foot. But at what point did the change begin, what direction did it take, and how far is it capable of going? The influence of the modification must have gone deeper down. It must have touched habits, and through them the whole internal structure; not only must there have been a change in the digestive organs, corresponding with the food, but in the whole skeleton, in the colour and shape of the skin, in the period of incubation, in the form of the nest, and in the instinct which chooses the nesting place. Has the golden eagle once a herring gull for its type, or has it once possess the form and habits of the creature which it preys? Is the strike on its way up to the merlin, and is it now waiting only for the talons of the pretty little hawk? Or what has been the change? Then what of the higher vertebrata? See the gradual modification of the foot—from the human foot, down to the hoof-enclosed toe of the horse. But if you change the feet, you destroy the animal. Take the horse, and how easily its feet might pass into those of the monkey! But this would alter every bone. It would change the whole digestive system, it would evoke new instincts, it would lead to new habits. Then the matter is in such a precarious condition that there might be no earnest put on the modifying power, at any point, by some foreign adapting power, which might leave only a hopeless form midway between the starting point and that to which it aspired. Then, if we proceed among the crustacea to carry their zoological studies a little further. They might perhaps then get a glimpse of divine wisdom, and goodness, and beauty in these modifications, as changes which have come from the hand of God's own creative hand, and which in no sense are to be held to be the fruit of the action of blind adaptive power. (Applause.)

The Chairman, in closing the proceedings, expressed a hope that the audience might be larger at the succeeding lectures of the series.

THE SCOTSMAN [illegible]
DECEMBER 6 1864

THE DUKE OF ARGYLL ON MR DARWIN'S THEORY OF DEVELOPMENT.

Last night, the Duke of Argyll delivered the opening address of the session of the Royal Society of Edinburgh, in presence of a large audience of members and visitors. The principal subjects of His Grace's address were the idea of "creation by law," and the theories which existing theories on the origin of species had upon our knowledge and conception. We give the portion of the address of greatest interest to the general reader, referring to recent theories of development, and especially to that of Mr Darwin.

The Duke of Argyll, after noticing the various senses in which the word law might be used in connection with creation, said:—It is certain that nothing is known or has been even guessed at, in respect of the history or origin of life, which corresponds with law in its strictest and most definite sense. There is no knowledge of any one or more forces—such as the force of gravitation, or of magnetic attraction, or repulsion—by which any one all the phenomena of life could be traced. Far less have we any knowledge of any such laws which could be connected with the successive creation or development of new organisms. There is one idea which has been common to all theories of development, and that is the idea that ordinary generation has somehow been producing from time to time extraordinary effects, and that a new species is in fact simply an unusual birth. It is worthy of observation that the earlier forms, in which the theory of development appeared, did suggest something more nearly approaching to a law of creation than is contained in the later forms which that theory has assumed in the hands of Mr Darwin. He looked upon the adaptation and arrangement of natural forces, which could compass those modifications of animal structure in exact proportion to the need of them, as an adaptation and arrangement which was in the nature of creation. It has not, I think, been sufficiently observed that the theory of Mr Darwin does not address itself to the same question, and does not even pretend to trace the origin of new forms to any definite law. His theory gives an explanation, not of the process by which new forms first appear, but only of the process by which, when they appeared, they acquire a preponderance over others, and thus become established in the world. A new species is, indeed, according to his theory, not a well to with the other theories of development, simply