

LONDON, SATURDAY, NOV. 24, 1860.

## REVIEWS.

## THE ORIGIN OF SPECIES.\*

WHEN Mr. Darwin finally came to the resolution of publishing the views at which he had arrived respecting the origin of species, he must have fully anticipated that his opinions would meet with a considerable amount of opposition; and, unless he be the most obstinate of optimists, he must have been further prepared to find no small part of this opposition assuming the form of ridicule and vituperation. The reception which has been given to his book by the leading literary reviews will have already realised his anticipations on the first of these points; and, if he has had any lingering and hopeful doubts as to the second point, the appearance of the work now before us cannot fail to dispel them at once and for ever. We are very glad that the first downright and unmitigated specimen of that peculiar and most objectionable form of opposition to which we have alluded, should have come from what is—comparatively, at least—an undistinguished quarter. We hardly know what feelings are likely to be aroused in Mr. Darwin's mind by Dr. Bree's book. On the one hand, it is not exactly a pleasant thing to be laughed at and abused by anybody; but, on the other, this form of opposition, however disagreeable it may be to the author personally, is precisely that which is least likely to do any material injury to the opinions against which it is directed. When, therefore, towards the close of his volume, Dr. Bree expresses a hope not only that Mr. Darwin will abandon his intention of giving to the public the larger work on the "Origin of Species" on which he is now engaged, but also that he will see the propriety of speedily withdrawing from circulation that which he has already been ill-advised enough to publish, we cannot say that we look forward with much anxiety to the occurrence of either of these contingencies; and we have a tolerably firm reliance on the conviction that, should either of them eventually be brought to pass, it must be by the operation of an agency considerably more powerful than any which Dr. Bree has hitherto shown himself capable of exerting.

The principal weapons employed by Dr. Bree, in his attack on Mr. Darwin are, as we have already intimated, ridicule and abuse. We can hardly say which of these two weapons he wields with the greater success. His ridicule reminds us irresistibly of a form of sarcasm which has recently become very popular among a numerous but not very respectable class of juvenile satirists. Like the small boy who salutes a volunteer in the street with cries of "Who shot the dog?" Dr. Bree follows Mr. Darwin, crying out, "Who said a goose was developed from an oyster?" and so on. The reader will find a fair specimen of Dr. Bree's more elaborate jocosity at pp. 55-58, where a funny sketch is given of the successive steps in the progress of development from the lowest to the highest mammal. What can be funnier than, under these circumstances, to speak of the opossum as "possum up a gum tree?" When we come to the hog, Dr. Bree observes that "one certainly feels rather comforted as the subject grows warmer, to find swine so low down in

the scale;" and when the ass is reached, he convulses us by the further remark that "here again we are thankful that a very vast number of asses must have passed since humanity was represented by a jackass." It is rather difficult at this point to resist the temptation of disregarding Solomon's injunction and answering Dr. Bree according to his folly. But, as Dr. Bree says, "We will get on. What next? Hares and rabbits for ever! Happy should we have been had the Darwinian theory stopped here, for then neither a dog to worry us nor a man to shoot us would have been developed by natural selection!" It is hardly necessary to allude any further specimens of Dr. Bree's powers of ridicule, or of the unsparing and irresistible manner in which they are wielded by him. As regards his vituperation, the reader will scarcely require to be informed that it consists principally in charging Mr. Darwin with holding opinions which are subversive of the Christian religion, and which have a direct tendency towards atheism. We are rather surprised to find Dr. Bree, at the commencement of his book, acknowledging the propriety of the rule that "in discussing a scientific question, we must not mix it up with proof that may be obtained from the sacred writings;" but our surprise is considerably lessened when he proceeds to qualify this acknowledgment by the convenient addition that "the question as I have placed it, or rather as Mr. Darwin has raised it, has gone far beyond the limits of a scientific discussion." Accordingly, after showing his just appreciation of Mr. Darwin's position as a naturalist by characterising him as "a bungling speculator," he goes on to charge him with denying the existence of an intelligent First Cause, by advocating doctrines which are inconsistent with the notion of a deliberate and all-wise adaptation of means to ends on the part of the Creator. Some of Mr. Darwin's views are "bordering on impiety," and "might simply be designated as profane;" and one passage in particular, in which Mr. Darwin attempts to show how organs of little importance might have been modified by natural selection, is a "statement which shocks and outrages every proper feeling, as much as it does violence to our reason and common sense." We need hardly pause to point out the fallacy of the assertion that a disbelief in a special act of creation in the case of each species is equivalent to a denial of the existence of an intelligent First Cause. We entirely agree with the view of the "celebrated author and divine," who, Mr. Darwin tells us in his second edition, has written to inform him that "he has gradually learnt to see that it is just as noble a conception of the Deity to believe that He created a few original forms capable of self-development into other and needful forms, as to believe that He required a fresh act of creation to supply the voids caused by the action of His laws." Towards the close of his volume Dr. Bree refers, as usual, to the first chapter of Genesis, and denounces Mr. Darwin's views as inconsistent with the Mosaic account of the creation. We are fairly weary of repeating the stereotyped answer to this mode of reasoning. If Dr. Bree is not acquainted with it already, he will find the gist of it in a passage from a late article in the "Quarterly Review," which very passage he himself, singularly enough, quotes with admiration, and in which the reviewer declares that "we cannot consent to test the truth of natural science by the word of revelation." The Bible was never designed to furnish us with scientific instruction; and to go to it for information on matters of this kind is simply to give proof of

a complete misconception of the purpose which it is destined to fulfil.

But Dr. Bree promises us, on his title-page, "a critical examination" of Mr. Darwin's work. It is, we presume, with a view of fulfilling this promise that, after a brief exordium, he makes a show of going through the book chapter by chapter, and of refuting successively the conclusions which it contains. When, however, we come to look more closely into Dr. Bree's method of "critical examination," we find that it consists principally in quoting Mr. Darwin's statements in his own language, with the addition of one or more notes of exclamation, as circumstances may require; thus implying, we presume, that the statements are so absurd as to carry with them their own refutation. Of other statements which do not admit of this interjectory mode of treatment, he simply and briefly denies the truth; he "begs to say, with all deference, that he does not believe them," or he is ready to "wager his existence" that they are not true. In the few cases in which he does condescend to argue against Mr. Darwin's conclusions, he exhibits a power of misconceiving, or of misrepresenting, his adversary's meaning, which, if not intentional, is, to say the least of it, very extraordinary. It is impossible to believe that he has not read carefully the book which he professes to criticise; but he has certainly failed entirely to apprehend its meaning, when he says that the only difference between Mr. Darwin and his predecessors (Lamarck and the author of "The Vestiges of Creation") is "that while the latter have each given a mode by which they conceive the great changes they believe in have been brought about, the former does no such thing." Mr. Darwin's theory of natural selection may or may not be the right method, but we should have thought it impossible to deny that it is at least a method of accounting for the formation of new species. When Dr. Bree comes to speak of the struggle for existence, which forms the foundation of Mr. Darwin's theory, we cannot quite make out whether he intends to deny *in toto* that there is any such struggle at all. At any rate, he protests loudly against Mr. Darwin's statement of its inevitable consequence that the strongest will live and the weakest will die; asking whether the enunciator of this statement has ever heard of "the storm being tempered to the shorn lamb," and affirming that, if it were true, the existence of any weaker species would be absolutely impossible in presence of a stronger. Is it that Dr. Bree *does* not, or that he *will* not, understand that Mr. Darwin's dictum applies in its full force only to individuals of the same species; or, in its widest application, only to such different species as depend for subsistence upon the same, or upon closely similar, circumstances and conditions. With this obvious limitation there can, we think, be no doubt as to its truth. If there be not food enough for all the individuals of any particular species, it is obvious that some of those individuals must go without food, and so perish; and, except in the not very probable contingency of the whole species being actuated by Mr. Ruskin's principles of political economy, it is scarcely less obvious that the stronger individuals will have a better chance than the weaker of obtaining a share of the available stock of food, and so of prolonging their existence. Between two species, on the other hand, the conditions of whose subsistence are entirely different, there is plainly no such struggle possible; and the existence of the one need not interfere in any way with that of the other. Even in the case of such species as depend upon similar condi-

\* Species not Transmutable, nor the Result of Secondary Causes; being a Critical Examination of Mr. Darwin's work entitled "Origin of Variation of Species." By C. R. Bree, Esq., M.D., F.L.S., Author of "Birds of Europe." (London: Groombridge and Sons.)

tions of existence, Professor Owen has called attention to several causes which may tend to the extinction of the larger and stronger, rather than of the smaller and weaker, species, pointing out that the latter are, as a rule, far more prolific than the former, and that in the event of a scarcity of food, the bulky animal will first feel the effect of stinted nourishment. Another sufficiently remarkable instance of Dr. Bree's mode of argument, is his reply to Mr. Darwin's observation that "among existing *vertebrata* we find but a small amount of gradation in the structure of the eye, and from fossil species we can learn nothing on the subject." Dr. Bree citing as a triumphant answer to this statement two passages in which Professors Owen and Buckland dwell at considerable length upon the complicated structure of the eyes of several genera of fossil *crustaceans*.

Nor is Dr. Bree's treatment of Mr. Darwin's well-known illustration of the effects which might be supposed to result from natural selection by a reference to those which, in the case of pigeons, are known to have been produced by artificial selection, at all more fair or satisfactory. He appears to wish to insinuate that it is by no means certain that all the different varieties of pigeons are descended from a common stock; but not liking to commit himself to a decided advocacy of this opinion, he endeavours to elude the difficulty by a bold assertion that "this part of the question is not worth an argument," and by repeated sneers at the idea of transferring to nature the office of a pigeon-fancier. In order to justify his disparagement of Mr. Darwin's illustration, he dwells upon the fact that, in the case of pigeons, the variations are produced by subjecting the birds to abnormal conditions of life until some changes are effected in the length of beak or the number of tail-feathers, "or," as he jocosely adds, "if pampered to extreme, perhaps a wattle grows on its beak, just as an alderman's nose gets red under turtle-soup." This comparison is not more faulty than the majority of those employed by Dr. Bree, since it is defective only in the one vital point that the alderman's red nose is not usually inherited by his children. But with all due deference to Dr. Bree's authority, we cannot agree with him in pronouncing the results obtained by pigeon-fanciers as so unimportant as not to deserve an argument. On the contrary, we must think that they are of the highest moment to Mr. Darwin's theory. Assuming, as we imagine we may safely do, that the different varieties of pigeons are really descended from one common stock, we have in these results a direct proof that by certain artificial means, of which careful selection is undoubtedly the chief, a species may be made to vary to such an extent that, if their common origin were not known, no naturalist would hesitate to rank some of the varieties as distinct species, or even as distinct genera. Dr. Bree, indeed, appears to have a comfortable assurance that he could, under no circumstances, make the mistake of taking a variety for a species, for he says that "a really good naturalist will always detect the species in the variety"—a statement which we cannot but regard as wild in the extreme, since, as a matter of fact, it is precisely the best naturalists who are least confident of their infallibility on this very nice point. Since, therefore, we know that results of such magnitude have been actually obtained by the necessarily imperfect agency of artificial selection, we are to some extent enabled to form a conception of what might be effected in the lapse of time by the far more continual and perfect process of natural selection.

We must not omit to call Dr. Bree's attention to a fact concerning Professor Owen, the knowledge of which cannot fail to arouse in him considerable surprise and consternation, and will, we fear, cause him to modify the favourable opinion which he has been kind enough to express of this great naturalist. Under the evident impression that Professor Owen is on his side of the question, Dr. Bree speaks of him in the most enthusiastic terms, characterising him as the highest living authority, and "thanking God that the cause of science and truth is supported by a pillar like that of Richard Owen—a man whose name will live long after the propounders of unsound theories and hypotheses, unsupported either by fact or scientific truth, shall have been consigned to the same category of writers as those who believed that geese were produced from barnaces." We need hardly say that we fully and honestly coincide in this high estimate of Professor Owen's merits, whatever we may think of the terms in which it is expressed. We much doubt, however, whether Dr. Bree will be willing to repeat it when we have informed him that he is under a total mistake in supposing that Professor Owen is of opinion that each distinct species of organised beings has been called into existence by a distinct act of creative power. We cannot, of course, expect Dr. Bree to accept so startling an assertion on our unsupported authority. We will, therefore, refer him to "Palæontology," Professor Owen's latest work—a book which Dr. Bree has clearly not yet read—at page 403 of which he will find the following explicit statement of opinion on this point:—"That the species of the mineralogist and the botanist should be, owing to influences so different as is implied by the operation of a second cause, and the direct interference of a first cause, is not probable. The nature of the forces operating in the production of a lichen may not be so clearly understood as those which arranged the atoms of the crystal on which the lichen spreads. Pouchet has contributed the most valuable evidence as to the fact and mode of the production by external influences of species of protozoa. With regard to the species of higher organisms, distinguishable as plants and animals, their origin is as yet only matter of speculation." But, while thus expressing his opinion that the species of organised beings are the result of the continuous operation of some secondary cause, the Professor distinctly declines to commit himself to any speculations as to the nature of this cause, stating that "it is requisite to avoid the common mistake of confounding the propositions of species being the result of a continuously-operating secondary cause, and of the mode of operation of such creating cause," and claiming for the biologist the right of entertaining the first without accepting any current hypothesis as to the second. In fact, none of the existing theories meet with his approbation, Mr. Darwin's, at least as little as any other. But there can be no doubt as to his opinion on the general question whether species are the result of the direct interference of the first cause; and, if there were any truth in Dr. Bree's absurd statement that "there is no *via media* between the speculations of Mr. Darwin and the doctrine of the special creation of living beings," it would be necessary to rank Professor Owen amongst the supporters of the former hypothesis. Dr. Bree's estimate of the merits of naturalists appears to be regulated in most cases by the degree in which their views coincide with his own; and we shall be curious to see whether, after this disclosure of Professor Owen's opinion on the doctrine of special creation, the Doctor

will continue to rank him as "the highest living authority," or whether he will place him among those heretics, against whom he fulminates the appalling denunciation: "Better ten thousand times that science, with every professor it ever had, were at the bottom of the sea, than that it should have culminated in such absurdity."

Dr. Bree adopts throughout his work a device which is frequently resorted to by advocates of his side of the question, and assumes calmly that the dogma of special creation stands on quite different ground from that occupied by any other doctrine of the origin of species, the former being a proved and established truth, while the latter can at best be nothing but a more or less probable theory. We need hardly say that there is not the slightest ground for such an assumption as this. Dr. Hooker, the celebrated botanist, at the recent meeting of the British Association at Oxford, adverted to this point, and stated very definitely that the doctrine of special creation was "merely another hypothesis, which, in the abstract, was neither more nor less entitled to acceptance than Mr. Darwin's; neither was it, in the present state of science, capable of demonstration." Dr. Bree of course cries out against, and attempts to reply to, this assertion of Dr. Hooker's, but his arguments amount to nothing more than a declaration that his own reason convinces him that his doctrine must necessarily be the true one. No candid reasoner, however, will claim for either doctrine any other position than that of a mere hypothesis, incapable, in the present state of scientific knowledge, of actual proof, and relying for acceptance solely upon the degree in which it is consistent with, and affords an explanation of, ascertained facts. At the time when it was first brought forward, the doctrine of special creation was in accordance with the then condition of science: for at that period nothing was known of the connection which exists between all branches of physical science, binding them into one great whole; and philosophers were far more ready than they now are to call in the aid of the First Cause to account for any phenomenon the cause of which was not immediately apparent. The tendency of scientific research at the present day is, on the contrary, to bring into connection with each other the various branches of physical science, and to regard the phenomena of each branch as resulting from the agency, not of so many distinct forces, but of so many modifications of one and the same force, which is common to all. As instances of this tendency, we may cite the doctrine of the correlation of forces; the breaking down of the barrier between inorganic and organic chemistry; and the investigations of Pouchet into the production of organised beings by external agencies. The doctrine of the production of species by the agency of a continuously-operating secondary cause is more in accordance with the present spirit of scientific inquiry than that which declares them to be produced by the direct interference of the First Cause. Had science, at the time when it became necessary to frame a theory to account for the origin of species, been in its present advanced state, there can be no doubt that the hypothesis which found most favour would have been one which asserted it to be the result of a secondary cause; and such an hypothesis would, in that case, have enjoyed that prescriptive authority which is in reality the sole advantage possessed by the theory of special creation.

It may not be superfluous to say a few words about the literary merits of Dr. Bree's work. These are, it seems to us, about on a par with

its scientific deserts. We have seldom met with a book that has been less skilfully written or less carefully revised. There are two or three awkward slips in Dr. Bree's Latin, upon which, however, as it is just possible that they may be the result less of actual ignorance of the language than of extreme negligence in the correction of proofs, we will not insist too strongly. But in his English there are some peculiarities which can hardly be accounted for in the same manner. "Demonstratable" and "modificable" are not likely to be misprints for "demonstrable" and "modifiable." In another place Dr. Bree complains that Mr. Darwin "asks us to surrender all that science and philosophic investigation has *affected* up to this time." Nothing can well be more carelessly worded than the following sentence—"He supposes, beginning at the separation of the neuter from the fertile species, that the variation did not all come in the neuter at the same time, but only in a few"—the meaning being that variation did not commence simultaneously in all the individuals of the neuter species. Finally, we should like to know who "Payley" can possibly be—an individual whose shade, in connection with that of Bell, Dr. Bree passionately invokes. Can he be our old friend the author of "Natural Theology?" or is he an authority with whose existence Dr. Bree alone is fortunate enough to be acquainted?

Such is the nature of the first distinct volume which has hitherto appeared in answer to the theory of natural selection. It must be confessed that Mr. Darwin has been singularly fortunate in his assailant. He must not, however, flatter himself that he will always be equally fortunate in this respect. His theory, ingenious and attractive as it undoubtedly is, is open to more than one objection the force of which is as yet irresistible. It is true that he has in great measure taken the sting from opposition, by himself enumerating the principal objections to which his hypothesis is liable, and by endeavouring, certainly not with uniform success, to diminish their significance and weight. It is impossible, however, not to feel a sympathy for a theory which is stated with such singular temperance and moderation, and the objections to which are put forward with such rare candour by its author. We cannot too strongly recommend Mr. Darwin's future antagonists, if they wish to make any serious impression on his position, to adopt a mode of attack as different as possible from that of which Dr. Bree's work is so remarkable an example.