

DARWIN ON THE ORIGIN OF SPECIES.

On the Origin of Species by means of Natural Selection, or the preservation of favoured races in the struggle for life. By Charles Darwin, M.A. London: Murray. 1860.

WE took up this book with a determination to enjoy it, however, on many points, we might differ from its conclusions. We had long indulged a fancy that the practice of classing into separate species had been carried too far; and that many of the objections brought against the details of the ark of Noah originated in errors of that kind. Under a firm conviction that no small number of the so-called species were only varieties, we had ourselves experimented in vegetation, and produced varieties which might well have been ranked as separate species. Therefore, though we could not go the length of affirming our belief, as Mr. Darwin does in his introduction, "that the view which most naturalists entertain . . . that each species has been independently created, is erroneous,"—we were at least prepared to feel much general agreement with his views. Indeed, taking into account our different standpoint, we not only endeavoured to open our mind to conviction, but were ready to look with a certain degree of favour upon opinions from which we were compelled to dissent.

The product of thirteen years of laborious research and investigation *demand*s attention, and will not fail to gain it from all those who know what labour close and earnest investigation entails. Unfortunately, however, for the cause of science and of general knowledge, investigation may be carried on with honest purpose, but with a *bias* of the mind which leads insensibly to the choice of exceptional rather than of normal examples. And while *facts* in nature and science are always useful, and we may return due thanks to those who gather them, whatever may have been the object they had in view; yet when they have been gathered for the definite purpose of supporting a foregone conclusion, it is always necessary to canvass freely, investigate closely, and receive with caution, conclusions thus advanced. Such, after a patient and attentive reading of Mr. Darwin's four hundred and ninety pages, is the opinion we have arrived at in his case. By choosing exceptional instances, abnormal developments, for the purpose of argument, and filling up from imagination every lapse or hiatus that occurs, the most preposterous opinions may be made to appear plausible—the most erroneous to wear the semblance of truth. And by these processes, and especially the latter, has Mr. Darwin endeavoured to prove that neither species nor genera were independently created.

To complain of a "philosopher" that he ignores scripture, and treats all natural questions as though no "records of creation" existed, may be thought narrow-minded. Love of truth demands, we admit, that evidence should at all times stand upon its own ground, tell its own tale, and not be warped to adapt itself to opinions previously or generally entertained. Yet there is no need for a writer to go out of his way in order to throw a lance at scripture doctrines or scripture conclusions. When this is done, and more especially when it is needlessly done, it exhibits an animus which is calculated, in thoughtful and especially in pious minds, to injure the cause such an author seeks to advance. Mr. Darwin has made this great mistake, and we are sorry for it. Had he confined himself to his proper theme, the question he has brought before the world would have been much more likely to have been discussed without warmth and without prejudice. What need was there, for example, for such an assertion as the following, in page 18?—

"Mr. Horner's researches have rendered it in some degree probable that man, sufficiently civilized to have manufactured pottery, existed in the valley of the Nile thirteen or fourteen thousand years ago; and who will pretend to say how long before these ancient periods, savages, like those of Tierra del Fuego or Australia, who possess a semi-domestic dog, may not have existed in Egypt."

If Mr. Darwin is so ready to assent to the probability of Mr. Horner's conclusion, very few will agree with him. Nor is it anything more than a *petitio principii* that man existed in a savage state before he existed in a civilized one; the whole bent of early history seems to show a degradation rather than an advance.

Again, in his chapter on "mutual checks to increase," the argument of which is the extinction of one race by another, he says:—

"Nevertheless, so profound is our ignorance, and so high our presumption, that we marvel when we hear of the extinction of an organic being; and, as we do not see the cause, invoke cataclysms to desolate the world, or invent laws on the duration of the forms of life."

Now this assertion is simply untrue. We do not invoke cataclysms to account for the extinction of species. The evidence of the occurrence of cataclysms (or deluges) rests upon entirely independent grounds. And it is *evidence*, and not mere suggestion, such as Mr. Darwin usually brings forward in support of his theories. And if we find that on the occurrence of these cataclysms species *are* extinguished, surely we are not compelled to travel out of the record along with Mr. Darwin in order to find other reasons to account for the fact than those which are clear and apparent, and which, resting on the surface, strike the mind at once.

We might point out many other passages of a similar character to these, and may have to refer to some of them; but first we will turn to the main argument of the book. This, we are sorry to say, is not exactly what its title imports, "The origin of *species* by means of natural selection," but the origin of all living creatures, vegetable and animal, from some *one* hermaphrodite, or some *pair* of organic beings. "Natural selection" is, therefore, simply a new term, coined for the purpose of supplying the place of "development," as used by the author of the "Vestiges of the Natural History of Creation;" and Mr. Darwin's book is an impotent attempt to prove how this process of development might go forward from such a beginning until the earth attained its present condition.

Before any gentleman calling himself a philosopher undertook a task like this, it might have been more modest had he shown some slight reasons for dissenting from the views generally entertained. We have Records of Creation which give us, authoritatively, a very different account of the origin of living creatures; and these records are substantiated by at least a thousand times the amount of evidence which Darwin can bring forward in support of his views—by evidence internal and external, by history and science, and by the very habits and constitution of the human mind. But these records our author simply ignores. He sets about his task as though he had never heard there was such a book as the Bible in existence. And yet he tells us that he sees no good reason why the views given in his volume should shock the religious feelings of any one: and refers to a "celebrated author and *divine*"—whose name he appears to have thought it more prudent to withhold—as having written to him that—

"He had gradually learned 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."

Very becoming certainly in a *divine*, who, if of the church of England, must at least have professed, at his ordination, to take the holy scriptures as his rule and guide!

That we have not misrepresented Mr. Darwin's main design we could give abundant evidence,—the great difficulty being to compress our remarks within reasonable limits, or choose among the (nearly one hundred) passages we had marked for notice. It is true that this design is but gradually "developed" in the book. Not to startle the reader too suddenly, he at first confines himself to his proper subject—species. Next he gives something like hints that genera as well as species have been produced by *varieties* in the process of natural selection. Then have we intimations of a clearer kind, as for instance:—

“Extinction, as we have seen in the fourth chapter, has played an important part in defining and widening the intervals between the several groups in each class. We may thus account even for the distinctness of whole classes from each other—for instance, of birds from all other vertebrate animals—by the belief that many ancient forms of life have been utterly lost, through which the early progenitors of birds were formerly connected with the early progenitors of the other vertebrate classes.” (p. 431.)

Again :

“On this idea of the natural system being, in so far as it has been perfected, genealogical in its arrangement with the grades of difference between the descendants from a common parent, expressed by the terms genera, families, orders, &c., we can understand the rules which we are compelled to follow in our classification. We can understand why we value certain resemblances far more than others,” &c. &c. (p. 433.)

The conclusion of this paragraph renders Mr. Darwin's object tolerably clear. By placing a few words in italics, we shall obviate the necessity for any remarks. It runs as follows :—

“We shall never, probably, disentangle the inextricable web of affinities between the members of any one class; but when we have *a distinct object in view*, and do not look to some *unknown plan of creation*, we may hope to make sure but slow progress.”

Our author gathers confidence as he goes on, and strengthens his expressions, even though, in some of the chapters, he weakens his argument. He seems to be somewhat in the condition of the man who repeats a falsehood until he actually believes it himself. He tells us :—

“As all the organic beings, extinct and recent, which have ever lived on this earth, have to be classed together, and as all have been connected by the finest gradations, the best, or indeed, if our collections were nearly perfect, the only *possible* arrangement, would be genealogical.” (p. 448.)

We gain another step at page 484; though the assumption there is somewhat modestly expressed :—

“Therefore I cannot doubt that the theory of descent with modification embraces all the members of the same class. I believe that animals have descended from *at most* only four or five progenitors, and plants from an equal or lesser number. Analogy would lead me one step further, namely, to the belief that *all* animals and plants have descended from some *one* prototype.”

This modesty is, we must say, a little cast aside at page 488; where his “notion”—for it is scarcely worthy the name of an hypothesis—is assumed as an established fact; and is recommended as a new light to guide the geologist in his researches :—

“As species are produced and exterminated by slowly-acting and still existing causes, and not by miraculous acts of creation and by

catastrophes; and as the most important of all causes of organic change is one which is almost independent of altered, and perhaps suddenly altered, physical conditions, namely, the mutual relation of organism to organism, the improvement of one being entailing the improvement or extermination of others; it follows, that the amount of organic change in the fossils of consecutive formations probably serves as *a fair measure of the lapse of actual time.*"

Finally, at the conclusion of the argument, the definite view comes out in no ambiguous language:—

"Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into ONE; and that whilst this planet has gone cycling on, according to the fixed law of gravity, from so simple a beginning, endless forms, most beautiful and most wonderful, have been and are being evolved."

And how is this extraordinary dogma attempted to be substantiated? Certainly not by anything that bears the slightest resemblance to what may properly be called proof. We have, it is true, a very carefully-laid train of circumstantial evidence. Wherever that evidence breaks down for want of connecting links, a special case is got up to show that there are, or may be, reasons for supposing a link has been lost. Sometimes, in addition to this, reasons are attempted to be brought forward *why* such link has been lost. But, from the beginning of the book to the end, we have not one jot of direct and substantial evidence in favour of this theory, by which the belief of the whole Christian world is to be overthrown. It is conjecture at the beginning, conjecture in the middle, conjecture at the conclusion, conjecture throughout. Facts, whose evidence might be turned into quite another channel, are bent into one particular direction. The absence of facts is made to tell in the same direction—imagination being called upon to fill up the hiatus. Whatever bears strongly against the theory is frittered away by nibbling criticisms and peddling suggestions. And when, in this way, as much of the field of argument has been passed through, as, on his own principle of "selection," he has thought it desirable to traverse, the author comes to the triumphant conclusion that his case is proved, or, at least *would* have been proved, if he had been able to find room for the facts by which his assertions might be substantiated.

Before giving such a digest of the book as will corroborate these assertions, we think it desirable to lay before our readers a few specimens of the *ease* with which Mr. Darwin obtains his conclusions; and which, as specimens of ratiocination, certainly do not tell much in favour of those patient and laborious investigations

which were extended, as he informs us, over a period of thirteen years. At page 190 he says:—

“Two distinct organs sometimes perform simultaneously the same function in the same individual. To give one instance; there are fish with gills or branchiæ that breathe the air dissolved in the water, at the same time that they breathe free air in their swim-bladders, this latter organ having a *ductus pneumaticus* for its supply, and being divided by highly vascular partitions. In these cases one of the two organs might with ease be modified and perfected so as to perform all the work by itself, being aided during the process of modification by the other organ; and then this other organ might be modified for some other and quite distinct purpose, or be quite obliterated.”

This, be it noted, is, after all, quite conjectural. The proper work of the *ductus pneumaticus* is to convey air to the swim bladder, and not to oxygenize the blood, which is the special office of the branchiæ, or gills. But suppose we yield Mr. Darwin this position, since he has taken the liberty of assuming it, what use will he make of it? In the next page (191) he carries on the argument thus:—

“I can indeed hardly doubt that all vertebrate animals having true lungs, have descended, by ordinary generation, from an ancient prototype, of which we know nothing, furnished with a floating apparatus, or swim-bladder. We can thus, as I infer from Professor Owen’s interesting description of these parts, understand the strange fact, that every particle of food and drink which we swallow has to pass over the orifice of the trachea, with some risk of falling into the lungs, notwithstanding the beautiful contrivance by which the glottis is closed. In the higher vertebrata the branchiæ have wholly disappeared—the slits on the sides of the neck, and the loop-like course of the arteries, still marking in the embryo their former position. But it is conceivable that the now utterly lost branchiæ might have been gradually worked in by natural selection for some quite distinct purpose, in the same manner as, on the view entertained by some naturalists, that the branchiæ and dorsal scales of annulids are homologous with the wings and wing-covers of insects, it is probable that organs which at a very ancient period served for respiration, have been actually converted into organs of flight.”

We may just remark, in passing, that the resemblance which the embryo of the mammal bears to the fish in the possession of bronchial apparatus, is but a wise adaptation to its then present condition, the true lungs or bronchiæ not being fully developed until the time for its breathing air has arrived. But our object in quoting this passage was to present the steps of our author’s argument, an argument which he deems cogent and conclusive. The proof he offers, let it be noticed, is, “I can hardly doubt,” “It is conceivable,” “It is probable;” and having *thus* established his position, without any additional evidence, six pages after he assumes it as demonstrated, and draws conclusions from it as an

established fact. Of this let the following passage from page 196 bear witness:—

“Seeing how important an organ of locomotion the tail is in most aquatic animals, its general presence and use for so many purposes in so many land animals, *which in their lungs or modified swim-bladders betray their aquatic origin*, may perhaps be accounted for. A well-developed tail having been formed in an aquatic animal, it might subsequently come to be worked in for all sorts of purposes, as a fly-flapper, an organ of prehension, or as an aid in turning, as with the dog; though the aid must be slight, for the hare, with hardly any tail, can double quickly enough.”

We leave the question of the tail, which Mr. Darwin's progenitors not having any necessary use for, have, it appears, by the process of “natural selection” managed to dispense with, or “work up.” Our object in quoting the passage is simply to place before our readers, in the connection in which they stand, the words we have put into italics. This is the triumphant conclusion drawn from such elaborate arguments as “I can hardly doubt,” “It is conceivable,” and “It is probable;” and this conclusion, it will be seen, is being “worked up” as an established fact, for the purpose of establishing other notions with just an equal amount of demonstration. Such vagaries show, indeed, how easily the process of argument can be conducted when the conclusion is foregone. First, it is *assumed* that swim-bladders are used for the purpose of oxygenizing the blood of fishes. Next, it is *assumed* that these modified swim-bladders are transformed into lungs to form the bronchiæ by which the blood of land animals is oxygenized. And lastly, it is very modestly assumed that the mere possession of lungs, which show palpably that their possessors were purposed and constituted, not for living in water, but in air, betrays their aquatic origin! A cogent specimen of reasoning is this to be put forth by the “naturalist of Her Majesty's ship Beagle.” One who can thus argue may well undertake the task of showing that he is right, and all the rest of the world are wrong!

Again, at page 242, after a very elaborate but inconclusive attempt to obviate the objections against his theory, which are presented by the conditions of such communities as those of bees and ants, he says:—

“The case also is very interesting, as it *proves* that, with animals as with plants, any amount of modification in structure can be effected by the accumulation of various slight, and, as we must call them, accidental variations, which are in any manner profitable, without exercise or habit having come into play. For no amount of exercise, or habit, or volition, in the utterly sterile members of a community could possibly affect the structure or instincts of the fertile members which alone leave descendants.”

And what is the *proof* thus offered? The case is simply that there are instances of fertile insects producing neuter or sterile

ones, in some instances of two or three different classes, all essential to the well-being of the community. And these sterile insects not propagating their kind, but being constantly produced by fertile ones, *not in their own likeness*, and produced continually of the same kind, the doctrine of development is set utterly at defiance, and shown, in their case, to be a dream. And the proof offered that this is accomplished by "natural selection" is simply, that since it is a well known fact in nature, which cannot be disputed, "natural selection" *must* have done it. What says the author himself just before?

"I am bound to confess that, with all my faith in this principle, I should never have anticipated that natural selection could have been efficient in so high a degree, had not the case of these neuter instincts convinced me of the fact."

The case, then, is cited to prove the amazing power of natural selection, instead of any evidence being brought forward to show how, by natural selection, it *has* been accomplished. And if this be not begging the question, what is, or can be?—the word *proves* being used, though no proof whatever is offered, and scarcely even a suggestion that bears clearly upon the facts against which our author was contending.

In just the same spirit of assumption, after searching the genealogical record in vain for *transitional* forms between distinct species or members of a distinct genus, which would serve for evidence that they might have been transmitted from the same parents—instead of of candidly confessing that his case here was rendered dubious for lack of distinct testimony, because those forms are *always* absent, he tells us (page 293) that "Nature may almost be said to have guarded against the frequent *discovery* of her transitional or linking forms." [No marvel, indeed, that such should have been the case, if there were none!] And again, in the same spirit, he says (p. 316), "We have seen in the last chapter that the species of a group sometimes *falsely* appear to have come in abruptly; and I have attempted to give an explanation of this fact, which, if true, would have been fatal to my views." But why is this word "*falsely*" thrust in? The chapter alluded to simply shows that the species *do appear* so to come in. By a very limping argument the author endeavours to show that this appearance *might* be false. But whether it be false or not is the question in dispute; and is not to be *begged* thus easily.

The whole *geological* argument is conducted in just the same easy way. Following in the wake of the late Baden Powell, our author treats the crust of the earth as though it contained just what it does *not* contain. Determined not to admit of convulsions or cataclysms, which would render new creations necessary, he fills up the enormous breaks which occur between different beds of organic remains with imagined creatures which *might* have been there deposited, if the conditions had been such as to admit of

their being preserved. And these, *of course*, are the intermediate forms between the earlier and the later series—the connecting links in the genealogical chain, none of which *ever appear* in the two or three and thirty geological eras which have been traced, or the perhaps greater number which Mr. Darwin imagines preceded them.

But more of this hereafter. We now turn to a few of our author's modest assumptions in the way of "development;" which few might be very greatly extended in number, if our space would permit. Take first the following from page 134—5 :—

"As the larger ground-feeding birds seldom take flight, except to escape danger, *I believe* that the nearly wingless condition of several birds which now inhabit or have lately inhabited several oceanic islands, tenanted by no beast of prey, has been caused by disuse. The ostrich indeed inhabits continents, and is exposed to danger from which it cannot escape by flight; but by kicking it can defend itself from enemies as well as any of the smaller quadrupeds. *We may imagine* that the early progenitor of the ostrich had habits like those of the bustard; and that, as natural selection increased in successive generations the size and weight of its body, its legs were used more, and its wings less, until they became incapable of flight."

This is a tolerable specimen of bold assumption; but what follows far surpasses it :—

"To suppose that the eye, with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correcting of spherical and chromatic aberration, could have been formed by natural selection, seems, I freely confess, absurd in the highest degree. Yet reason tells me, that if numerous gradations from a perfect and complex eye to one very imperfect and simple, each grade being useful to its possessor, can be shown to exist; if, further, the eye does vary ever so slightly, and the variations be inherited, which is certainly the case, and if any variation or modification in the organ be ever useful to an animal under changing conditions of life, then the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable to our imagination, can hardly be considered real. How a nerve comes to be sensitive to light, hardly concerns us more than how life itself first originated; but I may remark, that several facts make me suspect that ANY sensitive nerve may be rendered sensitive to light, and likewise to those coarser vibrations of the air which produce sound.

"In looking for the gradations by which an organ in any species has been perfected, we ought to look exclusively at its lineal ancestors; but this is scarcely ever possible; and we are forced, in each case, to look to species of the same group, that is, to the [supposed] collateral descendants from the same parent form, in order to see what gradations are possible, and for the chance of some gradations having been transmitted from the earlier stages of descent, in an unaltered or little altered condition. Amongst 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 this head. In this great class we should probably have to descend *far beneath* the lowest known fossiliferous stratum to discover the earlier stages by which the eye had been perfected. (!) I can see no very great difficulty (not more than in the case of many other structures) in believing that natural selection has converted the simple apparatus of an optic nerve, merely coated with pigment, and invested by transparent membrane, into an optical instrument as perfect as is possessed by any member of the great articulate class.

“He who will go thus far, if he find, on finishing this treatise, that large bodies of facts, otherwise inexplicable, can be explained by the theory of descent, ought not to hesitate to go further, and to admit that a structure even as perfect as the eye of an eagle might be formed by natural selection, although in this case he does not know any of the transitional grades.”

The so-called “large bodies of facts otherwise inexplicable” can all be explained by admitting them to be the result of the free will of an intelligent Creator, who, while *choosing* to adhere to certain typical forms, has, in his wisdom and goodness, adapted those forms to all varieties of place and circumstance. But Mr. Darwin cannot see this explanation, because his transparent object was to cast God out of His own creation. We supplement, however, this theory of the origin of the eye with the following remarks which follow shortly after :—

“It is scarcely possible to avoid comparing the eye to a telescope. We know that this instrument has been perfected by the long-continued efforts of the highest human intellects; and we naturally (?) infer that the eye has been formed by a somewhat analogous process. But may not this inference be presumptuous? [It may indeed!] Have we any right to assume that the Creator works by intellectual powers like those of man? [Certainly not!—and yet he goes on with the assumption.] If we must compare the eye to an optical instrument, we ought in imagination to take a thick layer of transparent tissue, with a nerve sensitive to light beneath, and then suppose every part of this layer to be continually changing slowly in density, so as to separate into layers of different densities and thicknesses, placed at different distances from each other, and with the surfaces of each layer slowly changing in form. Further, we must suppose that there is a power always intently watching each slight accidental alteration which, under varied circumstances, may in any way or in any degree tend to produce a distincter image. We must suppose each new state of the instrument to be multiplied by the million, and each to be preserved till a better be produced, and then the old ones to be destroyed. In living bodies, variation will cause the slight alteration; generation will multiply them almost infinitely; and natural selection will pick out, with unerring skill, each improvement. Let this process go on for millions on millions of years, and during each year on millions of individuals of many kinds, and may we not believe that a living optical instrument might thus be formed, as superior to one of glass as the works of the Creator are to those of man?” (pp. 188, 189.)

This picture of a Creator experimenting and trying the effect of his work, reminds us of the ironical words in the 50th psalm: "Thou thoughtest that I was altogether such an one as thyself." How infinitely does it sink beneath the portrait presented to us by the believing Hebrew writer, of one "who spake and it was done, who commanded and it stood fast."

But our author's geological assumptions are nearly as marvellous as his physiological ones. It has been supposed we had penetrated to azoic rocks. He teaches a different doctrine. Take the following proof from page 338:—

"Thus the embryo comes to be left as a sort of picture, preserved by nature, of the ancient and less modified condition of each animal. This view may be true, and yet it may never be capable of proof. Seeing, for instance, that the oldest known mammals, reptiles, and fish strictly belong to their own proper classes [a fair *prima facie* evidence that they were so *created*], though some of these old forms are in a slight degree less distinct from each other than are the typical members of the same groups at the present day, [and some of them, though he forgets to tell us so, in *no* slight degree *more* distinct,] it would be vain to look for animals having the common embryological character of the vertebrata, until beds far beneath the lowest Silurian strata are discovered—a discovery of which *the chance is very small*."

More marvellous, however, than this is Mr. Darwin's assumption of the very great imperfection of the geological record, a matter upon which he continually insists in various ways. And yet the fact is tacitly acknowledged that it was not the state of the record that suggested the idea of the loss of connecting links, but the absence of these connecting links, that induced the opinion of the imperfection of the records. For our author says:—

"But I do not pretend that I should ever have suspected how poor a record of the mutations of life the best preserved geological section presented, had not the difficulty of our not discovering innumerable transitional links between the species which appeared at the commencement and close of each formation pressed so hardly on my theory."

Is not this a clear specimen of inverted reasoning? We had marked many other passages of a similar character, but these must suffice; and we now proceed to give a brief digest of the work.

Mr. Darwin's object we have pretty clearly intimated. It is, to show that all living beings have proceeded, in genealogical order, from a few or one, and thus to overthrow the commonly received doctrine of creation. For whether or not that one, or those few, original forms must be regarded as called into existence by creative fiat, or produced by all-prolific nature, it agrees not with the doctrine of creation as usually understood.

Mr. Darwin introduces the question by considering the varieties which have been produced in animals and plants under domes-

tication, by a careful selection of seeds, or of individual creatures, for the purpose of propagation. Denying the doctrine of final causes, he does not regard these varieties as being influenced by a principle of domesticability, or a power of adaptation purposely given to them, as *intended* to be man's companions. On the contrary, he regards them as specimens of what *nature* has done, and is doing, to a much greater extent than man, among *all* classes of animals; she having a much wider field to work in. This, he argues, is carried on by a power or principle called "natural selection." What that process or principle is, the reader may perhaps learn by the following passage from page 5. We had marked thirteen passages on this subject from which to choose the most lucid; and we find none surpassing this, though it may be objected to as not very clear. Perhaps, indeed, it is impossible to present a *muddled* idea in transparent language:—

"As many more individuals of each species are born than can possibly survive, and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be *naturally selected*. From the strong principle of inheritance any selected variety will tend to propagate its new and modified form."

The argument proceeds by bringing into notice the fact that many more animals and plants are produced than can possibly be developed. Natural selection is here then brought into play to keep the strongest alive; and it is suggested that if any little *varieties* occur, the conditions may be such in the general struggle as to give them a better chance of life than their neighbours. Thus a tendency to variety would be produced. And thus by process of natural selection—time enough being given—species and genera might be originated. The laws of variation are then examined; and perhaps this is the ablest chapter in the book, though by no means satisfactory—theory and conjecture, here as elsewhere, taking the place of fact and argument. In chapter VI. he commences taking up the difficulties of his theory. The absence of transitional forms is got over in a rather extraordinary manner. We are told that all intermediate forms would exist in lesser numbers than those from which they proceeded, or those to whom they afterwards gave being; and therefore the older and the newer would continue, and the intermediate die out. And that this might *sometimes* be the case, we may readily allow; but why it should *always* be so, no better reason is given than Mr. Darwin's *ipse dixit*. However, by such reasons as these he gets over his difficulties as well as he may, and leads us through a somewhat learned but very inconclusive course of study on the general subject of transition.

Instinct forms the subject of Chapter VII. On this subject he

seems most perplexed by the instinct being apparently given, not for the good of the creature who possesses it, or its offspring, but of other independent creatures; and on some of these cases, especially that of the ants and the aphides, he labours hard to shew that the fact is not exactly as it appears to be. He argues indeed, apparently to his own satisfaction, that instincts which are generally considered so perfect are, after all, very imperfect; that the Ordainer of those instincts, if they were really ordained, was but an unskilful workman; and that all of them, even those we most admire, might after all have proceeded, like every thing else, from small beginnings, or almost from no beginning, by means of "natural selection."

Chapter VIII. takes up the question of hybridism, in which there is a general dissent from the views of the best writers on the subject. He evidently feels the question to be a difficult one; but passes through it with greater power and more apt illustration than through most other subjects of difficulty. It is, however, rather amusing to find an analogy drawn between the fertility of *varieties* when crossed, and the infertility of *species* when crossed; and an intimation that this is just what we ought to expect. To our less subtle powers of reasoning this appears just what we ought *not* to expect. But we do not wish to enlarge on this subject.

Chapters IX. and X. are on the imperfection of the geological record; and the geological succession of organic beings. On this subject we have perhaps already said enough to shew the *novel* manner in which Mr. Darwin reads the records which the stony tablets of the earth contain. Chapters XI. and XII. are on the geographical distribution of animals and plants. In them the author contends against the views of "centres of creation" as against creation altogether. Chapter XIII. is on the mutual affinities of organic beings, as morphology, embryology, and rudimentary organs. And Chapter XIV. forms a recapitulation and conclusion.

We are compelled by want of space to leave more than half the passages we had marked unnoticed; but on the subject of morphology we cannot forbear making a few remarks. Again and again does Mr. Darwin urge that the homologies which have been traced in vertebrate creatures, the adaptations of the vertebrate skeleton, and especially of the bones of the limbs, to so many different purposes, are proofs of genealogical relation—proofs of all having descended from the same parent; though men of much greater reasoning power have only seen in it an evidence of the Creator choosing certain typical forms, and adapting them to various uses, as occasion demands,—thus evidencing a family likeness, in the use of types, between nature and revelation. And again and again does Mr. Darwin urge that the morphological relations, or those of shapes and form, between distinct classes

and orders of creatures, their many and unmistakeable resemblances to each other, are inexplicable on the ordinary view of creation, and only to be satisfactorily accounted for by their having proceeded originally from one and the same parent. But if Mr. Darwin can lift his eyes a little above the earth he treads upon, he will find that the same adherence to certain typical forms is carried out in far distant regions—that the heavens can, in the way of morphology, claim relationship with earth. And surely he will not argue that, because, like the leaf-producing principle of every plant, around its stems or twigs, the moon describes a spiral motion round the earth, that therefore either the moon was the progenitor of the plant, or the plant the progenitor of the moon! And surely he will not argue that, because many of the spiral or conchoid nebulæ bear the strongest resemblance in shape to a common mollusc shell, that therefore either the mollusc was the progenitor of the nebulæ or the nebulæ of the mollusc! The true philosopher, who can generalize more widely, sees in homology and morphology clear indications of the universe being the work of one and the same Creator. But he who rejects *all* the evidence which lies upon the surface of things, and is resolved always to plunge beneath the surface in order to find contra evidence, need not raise our wonder if he sometimes plunges into the dark!

In concluding our notice of this extraordinary work, we can only express our regret that a man, evidently possessed of much patience and perseverance, and no inconsiderable powers of investigation, should have prostituted his talents to so bad a purpose, and have entitled himself, not to the gratitude, but to the reprobation, of the whole Christian world.

THE EDUCATIONAL WANTS OF INDIA.—II.

“Is it not imperative on us to do more for Christian education in India?” Such was the question with which we closed our former article, when we contemplated more than 32,000,000 of native children, all of a school-going age, entirely abandoned to the moral pollutions of Hinduism and Mahommedanism. But this is a question which we can better answer in the abstract, than in detail. That England should sit down quietly under a state of things so appalling, and attempt no remedy, is what few, if any, persons would maintain. General concurrence, however, in the nature of the remedy is not at all so evident.

Perhaps our first instinct is to look to a rectification of the government evil;—to obtain, if possible, a removal of the prohi-