No shrewd devices, no politic schemes, no ingenious ecclesiastical machinery, can take the place of this faith. Without it, a church is but a semblance, however politic its organization, however great its number, however imposing its outward show. With this faith, though only two or three be gathered together for common worship and for mutual help, there is a true church; for it is this faith which is the soul of the church, the original and vital source, from whence all the churches of Christendom have sprung, and which sustains them still in health and vigor.

DARWIN'S DESCENT OF MAN.*

WITHOUT at all compromising his theory about the ancestral relations of the human race, Mr. Darwin might have made one concession to the injured pride of many of his readers by adopting the more consistent title of "The Ascent of Man." For certainly "the struggle for existence" and "the survival of the fittest," as Mr. Spencer phrases the import of Darwin's theory, have resulted in an improved and upward development in humanity.

It is curious to observe that both the fright and the indignation excited to so intense a degree by the first announcement of the ultimate application of his theory by Mr. Darwin, have to a great degree subsided. Many of the religious

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* The Descent of Man, and Selection in Relation to Sex. By Charles Darwin. With illustrations. 2 vols. 12mo. New York: D. Appleton & Co. 1871.

The Genesis of Species. By St. George Mivart. New York: D. Appleton & Co. 1871.

journals which first recognized it with invective and ridicule, the expressions of horror and disgust, are now dealing with it temperately and with reassured courage as a simple scientific question. There are two chief reasons for the subsidence or cooling of that intense excitement just referred to. One of these is the reiterated assertion by men of science like Mr. Mivart, who profess also to hold an unimpaired religious faith in God and Christ and immortality, that Mr. Darwin's theory is not at any point hostile to or inconsistent with such a faith. The question between specific creations — the calling into being by a creative fiat of each one of all the varied forms of organic life, and the derivation of all those forms successively from one original germ potentially including them all — does not at all touch the issue as to whether there is or is not a Creator. Mivart, in the second of the books of which we have given the titles, insists most earnestly and with an admirable calmness, persuasiveness, and force of pleading on this point. Moreover, he shows that there is nothing new in the alternative thus presented. He quotes from the highest orthodox authorities, Christian Fathers like St. Augustine, the Christian schoolmen like St. Thomas, positive avowals of a belief, as more consistent with the Divine Nature and attributes, that God created all things by the potentiality of development in the ovum of the universe. So far, then, as this reassurance of religious faith, as not assailed or impaired by the Darwinian theory, has rallied from the first shock which it received, we have one reason for the calmness and intended candor of consideration with which the full development of it is now entertained. But we think there is another and a far more effective reason for this changed feeling in the fact that Darwin's theory, as applied to man, falls so far short of being demonstrated or proved. The assertion of it in simple terms, followed by a few comprehensive statements of its simplicity, its probability, and the sort of evidence which can be adduced for it, is one thing; the elucidation of it in details, by tracing the means, the stages, and the transitional links of the marvelous process, is quite another thing. Already have the complications into which the details

of his theory lead him become embarrassing to Mr. Darwin himself, and with admirable candor he acknowledges that at least his method and line of direction for establishing his theory have been at more than one point effectively challenged by other scientists, and especially by the writer of an able article in "The North-British Review" for June, 1867. He has therefore modified his theory. Mr. Mivart is the most instructive and fearless of the host of scientific men who have subjected the theory to the severest tests. While avowing that he is not repelled by the theory, nor unimpressed by the force of argument and the show of evidence to be adduced for it, Mr. Mivart most certainly cripples it. The aim of his book is to show, by demonstration, that the genesis of species cannot be accounted for by "Selection in Relation to Sex" alone, but involves at least other necessary favoring and co-operative agencies, of so undefined a working that we are still left in the dark as to the verification of the theory.

A curious issue is raised as to the amount of time during which this earth has been available as the scene and the repository of means and resources for the developing process through which a lichen or a weed has culminated, through sea and land, plants and creatures, into a Darwin or one of his compeers. We have come freely to allow that time is of no account in creation and its outgrowths. The man of science may draw on unlimited duration. He may take for granted epochs of such dizzy and abysmal perspective as to be definable only by arithmetical statement. So, at least, we had admitted. But Mr. Mivart puts in rather a stingy limitation here. He seeks to approximate to the total allowable amount of time which other sciences will grant us at the service of the processes of organic evolution. Sir William Thomson has from three distinct lines of inquiry offered such an approximation: first, from the action of the tides on the earth's rotation; second, from the probable length of time during which the sun has illuminated this planet; third, from the temperature of the interior of the earth. The conclusion which Thomson reaches is, that all geological history show-

ing continuity of life on this earth, must be limited within some such period of time as one hundred million years. One would think that was a generous allowance, giving time enough for almost anything, even for a most harmonious result from the play of the atomic theory. But the allowance is found wholly inadequate. Known and measurable and inferable processes cannot be hurried up in that way. Twenty-five million years is pronounced to be but a moderate computation for the deposition of the strata down to and including the Upper Silurian. This deposition represents only a hundredth part of the time needed for the whole evolutionary work. So that two thousand five hundred million years — twenty-five times as much of time as other sciences leave at our disposal — are required by Darwin. He tells us, when speaking of the extinction of many races of men, known as historical events, that "Humboldt saw in South America a parrot which was the sole living creature that could speak the language of a lost tribe." What Max Müller will have to say to this we wait to hear. For if the philologists as well as the geologists and astronomers insist upon finishing up their sciences within a twenty-fifth part of the time which Darwin wants we fear that his theory will be much further complicated.

A few passages extracted from Mr. Darwin's work, as conveying some of his more emphatic statements of points involved in his theory, may be of interest here.

After showing how man and all other vertebrate animals have been constructed on the same general model, and pass through the same early stages of development, he says, "Consequently we ought frankly to admit their community of descent: to take any other view is to admit that our own structure, and that of all the animals around us, is a mere snare laid to entrap our judgment" A most extraordinary assumption, by the way, utterly unphilosophical and arbitrary.

"This conclusion is greatly strengthened, if we look to the members of the whole animal series, and consider the evidence derived from their affinities or classification, their geographical distribution,

and geological succession. It is only our natural prejudice, and that arrogance which made our forefathers declare that they were descended from demi-gods, which lead us to demur to this conclusion. But the time will before long come when it will be thought wonderful that naturalists, who were well acquainted with the comparative structure and development of man and other mammals, should have believed that each was the work of a separate act of creation."

It may be because of our obtuseness or prejudiced opinion, but we fail to see one particle of evidence for this conclusion. Admitting that the vertebrate type was the structure best adapted as an organism for all the creatures who exhibit it, why might it not be preserved and imitated with all the variations and adaptations to fit it for creatures under different conditions of life without the supposition — for it is no more — which Mr. Darwin connects with the phenomena? Articles fabricated by men, ships, wheel-carriages, tables, &c., are respectively constructed with reference to certain conditions which require that they all should have certain qualities in common, — particular variations being intelligently adapted to particular uses. A coasting-schooner and a frigate, a cart and a coach, a dining-table and a card-table, are respectively examples of structural similarity with specific adaptations. Intelligence in one exercise of it is shown in what is common to both structures, and in another exercise of it in the specific adaptation to a particular use. The first railroad passenger cars in England were made to resemble three old-fashioned stage coaches united together. The coach was thus the model of the car. But was it by "natural descent," or by intelligent adaptation of a previous convenient and approved arrangement?

The following is a frank admission: —

"In what manner the mental powers were first developed in the lowest organisms is as hopeless an inquiry as how life first originated. These are problems for the distant future, if they are ever to be solved by men."

Mr. Darwin says, "To maintain, independently of any

direct evidence, that no animal during the course of ages has progressed in intellect or other mental faculties, is to beg the question of the evolution of species." Very true. But the question may be begged on one side as well as on the other.

"The brain of an ant is one of the most marvelous atoms of matter in the world, perhaps more marvelous than the brain of man."

Something must be done towards supplying the deficiency so frankly admitted in the closing words of the following paragraph, before Mr. Darwin's theory will meet the test of the Baconian philosophy: —

"Even if it be granted that the difference between man and his nearest allies is as great in corporeal structure as some naturalists maintain, and although we must grant that the difference between them is immense in mental power, yet the facts given in the previous chapters declare, as it appears to me, in the plainest manner, that man is descended from some lower form, *notwithstanding that connecting links have not hitherto been discovered.*"

Again Mr. Darwin says, —

"The difference in mental power between an ant and a coccus is immense; yet no one has ever dreamed of placing them in distinct classes, much less in distinct kingdoms. No doubt this interval is bridged over by the intermediate mental powers of many other insects; and this is not the case with man and the higher apes. But we have every reason to believe that breaks in the series are simply the result of many forms having become extinct."

"If man had not been his own classifier he would never have thought of founding a separate order for his own reception."

"But we must not fall into the error of supposing that the early progenitor of the whole Simian stock, including man, was identical with, or even closely resembled, any existing ape or monkey."

"The great break in the organic chain between man and his nearest allies, which cannot be bridged over by any extinct or living species, has often been advanced as a grave objection to the belief that man is descended from some lower form; but this objec-

tion will not appear of much weight to those who, convinced by general reasons, believe in the general principles of evolution."

It strikes us that there is something Hudibrastic in that mode of meeting a grave objection.

Here is a description of which Mr. Barnum may avail himself for the pattern of a curiosity for his new museum of wonders: —

"The early progenitors of man were no doubt once covered with hair, both sexes having beards; their ears were pointed and capable of movement; and their bodies were provided with a tail, having the proper muscles."

"The Simiadæ branched off into two great stems, the New-World and the Old-World monkeys; and from the latter, at a remote period, Man, the wonder and glory of the universe, proceeded. Thus we have given to man a pedigree of prodigious length, but not, it may be said, of noble quality. The world, it has often been remarked, appears as if it had long been preparing for the advent of man; and this, in one sense, is strictly true, for he owes his birth to a long line of progenitors. If any single link in this chain had never existed, man would not have been exactly what he now is. Unless we willfully close our eyes, we may, with our present knowledge, approximately recognize our parentage; nor need we feel ashamed of it. The most humble organism is something much higher than the inorganic dust under our feet; and no one with an unbiased mind can study any living creature, however humble, without being struck with enthusiasm at its marvelous structure and properties."

We think that many readers of these fascinating volumes will agree with us in avowing, that, while midway in the perusal of them, the complications, intricacies, and assumptions through which Mr. Darwin has to develop his theory, and the missing links and the gaps which make the demonstration of it so far, at least, an utter failure, turn the thoughts aside from the main object of the work, it engages the whole interest of the mind as a work on Natural History.

G. E. E.