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NEW PUBLICATIONS.

The Descent of Man.*

THE PRESENT POSITION OF THE ARGUMENT. It is generally understood among Mr. DARWIN'S friends in this country that the only terms which he made with the Messrs. APPLETON, in issuing his new book on the Descent of Man, were that they should print a thoroughly revised and corrected edition of his first great work, The Origin of Species. of which hitherto there had been no complete American edition. It is to be hoped, for the credit of American publishers, that the Messrs. APPLE-TON will be more generous than their bond toward the distinguished author, as undoubtedly Mr. DARWIN'S last work is destined to enjoy an enormous circulation for many years to come on this side of the Atlantic. He was wise, however, in the reported centract. The work on which his fame will rest is The Origin of Species; and it was of the utmost importance to him as a scientific thinker that every improvement which his well-known candor, and a wider investigation, suggested in the form of the celebrated argument should be engrafted on the American edition. The Messrs. APPLETON have accordingly issued a revised "Fifth Edition," in a not very handsome style, however, of this remarkable work.

Whatever coming generations may think of the Darwinian hypothesis; whether it will be classed with the Epicurean speculations on the origin of matter, with LA-MARCK's theories of development, or the ingenious suggestions of the Vestiges of Creation, captivating but unsound, or whether it will stand with the nebular hypothesis, as a stable working theory of the origin of the kingdoms of life-in any case the future historian of the progress of the human mind must testify that no one speculation has so affected every branch of scientific investigation in the present century, and so influenced the whole field of natural research, as the Darwinian theory of "Natural Selection." There is not a specialty in the whole domain of natural science, however remote, in which the student will not at once perceive the influence of "Darwinism" on all new investigators.

The mode of looking at nature is changed. BACON'S philosophy did not more entirely alter the process of investigation in all branches of science, to the English mind, than has the Darwinian theory among the students of nature in Europe and America. The supernatural method of accounting for phenomena is dropped. The duty of science-not ignoring the ultimate supernatural Cause-is solely with the immediate causes of all the phenomena of life on this earth. It is assumed that every form or appearance in organic or inorganic existence can be explained, though no present explanation may be possible. The task of science is simply to collect facts with the utmost patience fidelity, and then, if possible, to group them under some general law or mode of action, and still again attempt, with untiring industry and a love of truth which is almost a religion, to simplify and generalize from these laws a still broader law. Always to be open for new facts and premises, to candidly confess if these be opposed to the theory, to begin and build again on a broader basis if the foundation be too narrow; but never for an instant to doubt that each phenomenon in this world has a direct and sufficient natural cause-this is the spirit of the new Darwinian philosophy. Under the influence of this school the former narrow specialists in the field of natural science are becoming broadened. Each investigator carefully collects facts, but he gathers them under the light of broad generalizations, which connect them with the whole world of nature, and give a wonderful attraction and dignity to his pursuit.

The essence of Darwinism is that nature-though originating from divinityis an intricate, complicated, but explainable system of things, where the obligation of the student is not to say this is an ultimate fact-this "an idea of the Creator"-this a "final cause," or "plan of creation," or "ideal form of Nature," but "what is the cause of this appearance?" DARWIN, indeed offers a cause of specific appearances, an hypothesis of origin, to which his name will always be attached. This law he has poetically named "natural selection," or the "survival of the fittest," (as SPENCER has defined it.) Under this, with the unexplained law of variation, the wellknown principle of inheritance, and the greatifacts of overproduction and consequent 'struggle for existence," he has attempted to explain the origin of all the kingdoms of life, and all the natural phenomena of this

The works, whose titles we have placed below, are only a small portion of the important treatises issued during the past ten years, illustrating or opposing this great hypothesis. German book-sellers and libraries already have an important division in their lists, headed "Darwinismus." studying these and the writings of the codiscoverer of the law of natural selection, Mr. WALLACE, and such works as those of Bir John Lubbock and the Duke of Argyll, the natural question arises, "How stands the great argument on origin?"

Many of the works we have mentioned, and such standard books of science as Sir Charles Lyell's, are, in one aspect, only side illustrations of the application of the theory of natural selection. Mr. G'ALTON, in the volume on Hereditary Geniu, has made, under this hypothesis, one of the most ingenious and scientific investigations on the subject of the transmir sion of mental and mòral faculties in man which has ever been undertaken. We regret that we have no more space he re to analyze its methods or quote its regults. It is a book which should be in the nands of every scientific student of man. As a model of this close scientific research, we commend his ingenious explanatic n of the gradual extinction of the families of celebrated Judges in English history.

The strongest work by far which has appeared against Darwinism, pure and simple, is undoubtedly MIVART'S Genesis of Species. The Duke of ARGYLL's writings are weak in comparison, as are nearly all arguments, especially the theological ones, on the other side. Next to this will come Mr. WALLACE'S writings, both in the article whose title we give, and in his volume on natural selection. The treatise of Mr. MIVART (whose name, unhappily, is not familiar to our scientific world) is strong from his remarkable candor and courtesy, and his thorough familiarity with points in natural history which bear on the discussion. He writes, too, with singular balance and clearness. Some of the points he makes seem almost unanswerable; and so confident are all scientific students of Mr. DAR-WIN's unassailable integrity and candor, that they would not be surprised to see him at any moment abandoning some of his strongest positions under such a respectful and truth-loving assault.

The most important of MIVART's objections are, briefly, that "natural selection" cannot account for the origin of beneficial variations; that the co-existence of closelysimilar structures of diverse origin is inconsistent with it; that species sometimes develop suddenly and not gradually, and have very definite lines to their variability; and finally, that there are some phenomena in organic forms on which natural selection throws no light. His points in regard to the absence of certain fossil transitional forms, the peculiar distribution of animal life on the earth, and the physiological differences between "species" and "races," do not seem near so strong as the other, and are all capable of explanation under the Darwinian theory. Mr. WALLACE is a naturalist perhaps even superior to Mr. DARWIN. As a theorist, he early, in coincidence with the other, struck on the hypothesis of natural selection. He was one of the first-an American writer on ethnology being the first-to apply the theory to man. His explanation of the ac-

tion of this principle on the formation or de-

velopment of man's mental and moral faculties is not surpassed in ingenuity and delieacy of reasoning by anything which DAR-WIN has written.

Anything, therefore, which he could offer on the "great argument" is worthy of all attention. Both he and MIVART believe in evolution; both apparently believe in the development of man's body from a semi-human form. Indeed, MIVART has suggested, in a recent letter in Nature, that if the Darwinian hypothesis of man's origin be true. among the three Simian lines of descentthe Orang, Chimpanzee and Gibbon-the one which has been most parallel to man is that of the Gibbon.

But where they diverge from the great philosopher is in the extent of the working of the law of natural selection, and in his theories of the origin of the human faculties. and especially of the moral powers. They admit "natural selection" to be a vera causa, but not a causa sufficiens. It explains, but does not explain all. Mr. WALLACE is staggered by the hairless back of man, the uselessly large brain of the savage, and the ideal faculties of the lowest man, which apparently could not be formed under the law of the survival of the most useful capacities. From his long experience with savage tribes, moreover, and as a result of reflection, he has become an "intuitionist," and has no faith in the development dogma that conscience is the transmitted and accumulated result of experiences of benefit to the community in certain actions, or of the damage from the conquest of the higher social instinct by

a lower instinct. He has found a wild savage in the Malay Archipelago acting under an apparent intuition of truth and justice, where the action only brought loss both to the individual and the community. Mr. MIVART, again, is a devout orthodox believer, (though an evolutionist,) and, therefore, rejects the Darwinian explanation of the origin of the sense of right and wrong. The position of both on the great question is one which is more and more being adopted by scientific thinkers of a not too ultra stamp in both America and Europe; that the principle of natural selection is a law; that it underlies and explains the formation of varieties, and, perhaps, of nearly all species; that it has had an enormous influence in giving the whole organic world its present shape, appearance and variety, but that there are forms of life, organs, qualities and changes so peculiar and intricate, structures so complicated, features of so little benefit or injury, and sometimes of such apparent loss and disadvantage, that some other cause or law is necessary to explain them than merely the principles of "variation," "inheritance" and "struggle for existence."

Dr. Asa Gray-than whom no American has written more lucidly on this theme, and himself a Darwinian-has somewhere said that, in the experience of naturalists, "Variation often seems to be led along some beneficial line." Mr. MIVART concurs with this, and we suppose Mr. WALLACE would agree; yet DARWIN himself could never accept it and hold his theory in its pure form.

In the particular argument on the "Descent of Man," Mr. WALLACE disagrees especially with his distinguished associate; and on this field his investigations and experience have probably been even greater than Mr. DARWIN'S. The immense chasm separating man from the highest form of monkey is what causes him here to doubt the universality of his own law, "Natural Selection." How a fourhanded, creeping, hairy, speechless semihuman creature with, small brain and corresponding capacities, could develop into an erect, smooth-skinned, twohanded, large-brained, fire-using, and above all, speaking man, at a time when the struggle for existence is severest, and remain in a limited area of tropical earth during the enormous interval of these changes, he cannot understand, "His absolute erectness of posture, the completeness of his nudity, the harmonious perfection of his hands, the almost infinite capacities of his brain, constitute a series of correlated advances too great to be account-

ed for by the struggle for existence of an isolated group of apes in a limited area," There must be, he conceives, other causes than the struggle for existence to produce such an immense contrast between man and

Leaving now Mr. DARWIN's critics, it becomes necessary to ask, "How he himself stands in the great argument?" His last book, on the Descent of Man, will undoubtedly be by far the most generally read of all his writings. And yetremarkable as it is in the candor of its discussions, in the extraordinary range of its facts, the ingenuity of its explanations, and clearness of the style-it is not by any means the greatest of his works. To his many admirers, it will be almost discouraging to note that the very first application of his theory to the simplest physical and supposed generic connection, has, after all, so little force or ground to rest upon. To the physicist, no two families would seem easier to connect, under the Darwinian hypothesis, than the human and simian. And yet the careful reader will finish DAR-WIN'S ingenious list of physical resemblances between man and the monkey, and find them, after all, extremely vague and remote, while the gap between the two, moral and mental, will appear, as it does to WALLACE, unexplainable. Mr. DARWIN has in this volume contributed nothing to the science of ethnology, and added little to the weight of his former arguments. His presentation. however, of the analogies or resemblances between the faculties of animals and men, though not new, is deeply interesting, and cannot fail to lead to more profound investigations in this attractive field.

In one point of view, it must have a deeply humane influence-in showing the

many close points of sympathy between man and "the mutes," (as a fellew-Darwinian se respectfully terms "the brutes.") DARWIN'S explanation of "conscience," which was, of course, the great stumblingblock to the application of his theory, is highly ingenious and striking, but is odious and utterly unsatisfactory to the "intuitional" thinkers everywhere, and will without doubt revolt the religious world more than any other portion of his writings. We have not space there to discuss it. Singularly enough, there is in this last work a slight "change of front" by the great theorist. He is by nature such a lover of truth, that we are convinced he would tomorrow throw up his whole hypothesis, if he found unanswerable objections to it. The arguments of his opponents have shown that there are very many structures or organs, or appearances in the organic kingdom, which cannot be said to be either useful or injurious; and which accordingly have not come under the law of natural selection.

The remarkable fact, too, of Beauty-the wonderful and delicate combinations of colors and outlines of forms through the organic and inorganic world, where no advantage seems to result from these pleasing and exquisite appearances-has staggered him. Under pure Darwinism Beauty has no place except as it is half. To meet these very weighty objections, Mr. DARWIN, in the volume on the Descent of Man, has presented a new hypothesis which is almost as

original as his great one. It was hinted at in his first volume, and undoubtedly led his German followers to work it out somewhat in advance of this presentation. It is the theory of "Sexual Selection" which occupies some two-thirds of these last volumes. Nothing that DAR-WIN has written is more ingenious or suggestive than the long, minute and careful investigation in this field, presented in his last work. The argument is too extended to be even analyzed here. It is sufficient to say that most of his followers, and the majority of students of science, will find it ingenious, but unsatisfactory. They will admit that it explains many phenomena, but they find that Mr. DARWIN accounts for too much by it. Many of the facts included under it would seem more easily explained by natural than sexual selection. Mr. WAL-LACE objects also that it does not explain

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the beautiful colors and appearance of inects, or the lowest forms of life. The "Inmitionists" everywhere will rejoice that it leaves Beauty as unexplained as ever, while it proves, to our surprise, that the birds have the same refined and cultivated tastes the most cultured human beings. It cannot be admitted that DARWIN, by the new theory, has removed the main objections to the old. The great question of "Origin" is as unsettled as ever.

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Shall we everknow more of the "Descent of Man"? At present there is an immense and unfilled gap between human beings and the highest animals. It is not at all probable, whatever may be our theory of the physical genealogy of man, that this chasm will ever be bridged. If there be an intermediate form, it must have perished from the earth millions of years ago; for recent investigations by Prof. WHITNEY in the Drift, and even the Pleiocene of the Sierras, show that man, in his prefect development, existed at that enormously distant period on the earth. A single link in man's long genealogical chain might easily perish from existence and never be seen again. On the other hand, unbiased naturalists like WAL-LACE and MIVART, believe that no known natural causes can explain the origin of man's mental and moral faculties; in other words, that in the beginnings of the first human soul or mind, a supernatural power intervened. If this be allowed, it would not be a patent supposition that to was supernaturally adopted, in harmony with the nearest physical forms. DARWIN himself admits that somewhere in the vast ine of human development, the soul, by Divine power, was made immortal. The student of physical science may equally believe that somewhere in that time it was created, and its brain and body adopted to it.

THE ORIGIN OF SPECIES. Fifth edition, with additions and corrections. By CHARLES DARWIN. Pp. 447. D. APPLETON & CO., New-York. 1871. THE DESCENT OF MAN. By same. 2 vols., 12 mo, pp. 405, 498. 1871. APPLETONS. ONTRIBUTIONS TO THE THEORY OF NATURAL SELECTION. By A. R. WALLACE. Pp. 384. MACMILLAN & CO., New-York. 1870. A REVIEW OF MR. DARWIN'S DESCENT OF MAN. By A. R. WALLACE. Pp. 36. BRENTANO, New-York. 1871.
THE GENESIS OF SPECIES. 12 mo, pp. 314. By ST. GEORGE MIVART. 1871. APPLETONS.

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WYORK DAILY TRIBUNE,

NEW PUBLICATIONS.

DARWIN'S DESCENT OF MAN.

DESCENT OF MAN, AND SELECTION IN RELA-ION TO SEX. By CHARLES DARWIN, M. A., F. R. S. Two Volumes. Vol. I. 12mo. pp. 409. D. Appleton

l bisi opponenta hara above ebelieve that it is now generally admitted among tife men that the publication of Darwin's gin of Species" has formed a new epoch in the wyof natural history. Not that his views have is not that his views have been placed as the bridge state of the reach of correction on the part of future d the transfer the many those who acknowledge the general principle survival of the fittest," has been regarded as un-Table in several important details, or incumbered ith difficulties which have yet found no valid solua. Still the progress of his theories in the scienworld has been something marvelous. They to found a reception within the short interval their announcement which was not accorded in to Newton's doctrine of gravitation, or to Kant's alreis of the conceptions of time and space. The thity with which they have impressed the minds stientific men with a conviction of their truth is dead probably without a parallel in the history of nowledge. Much of their success may no doubt be solved to the profound learning, the simple and timest tone, the transparent candor, and the freethe is not been said to the forth by the author. His evident love of truth is saled to disarm prejudice. His immense array of facts has an imposing character, while the lucid and unaffected style of his composition perpetually entices the interest of the reader.

Not a little curiosity has been awakened with reand to the contents of the present work, the purpose which is to apply the principles of Natural Selecto the explanation of the origin or descent of the human race. The main questions to which it is evoted relate to the gradual evolution of man, like every other species, from a certain preexisting form, and to the manner of his development. The conclusion at which the author arrives after a long process of investigation is that man is the co-descendant with other species of some ancient and lower form, which became extinct at a period anterior to any

records of human experience. The evidence of the descent of man from some lower form is sought by the author, in the first place, from the correspondence between his physical structure and that of the lower animals. Man is constructed on the same general type with other mammals. The bones in his skeleton can be compared to those in a monkey, bat, and seal. So it is with his muscles, nerves, blood-vessels, and internal viscera. The brain follows the same law. Man is liable to rereive certain diseases from the lower animals, like hydrophobia, variola, the glanders, and others, which he also communicates to them in return. This fact proves the close similarity of their tissues and blood, both in minute structure and composition. Monkeys are liable to many of the same non-contagious diseases that we are. One species that was carefully observed for a long time in its native land was found subject to catarrh, with the usual symptoms, and which when often recurrent led to consumption. They suffered also from apoplexy, inflammation of the bowels, and cataract in the eye. Medicines produced the same effect on them as on us. Many kinds of monkeys have a strong taste for tea, coffee, and spirituous liquors. They will also, as Mr. Darwin has himself seen, smoke tobacco with pleasure. The natives of north-eastern Africa catch the wild baboons by exposing vessels with strong beer, by which they are made drunk. These facts prove how similar are the nerves of taste in monkeys and man, and how similarly their whole nervous system is affected. It is, in short, scarcely possible to exaggerate the correspondence in general structure, in the minute structure of the tissues, in chemical composition, and in constitution between man and the higher mammals, especially the anthropomorphous apes.

A fact of curious interest, on which Mr. Darwin dwells at considerable length is the presence in the higher animals of certain organs in a rudimentary condition, such as the mamme of male quadrupeds, or the incisor teeth of ruminants which never cut through the gams. Rudiments of various muscles have been observed in many parts of the human body. Not a few muscles, which are regularly present in some of the lower animals can occasionally be detected in man in a greatly reduced condition. The power which many animals, especially horses, possess of moving or twitching their skin, is due to a muscle, of which the remnants in an efficient state are found in various parts of our bodies; for instance, on the forehead by which the eyebrows are raised. Some persons have the power of contracting the superficial muscles on their scalps, and these muscles are in a partially rudimentary condition. M. de Candolle communicated to the author a singular instance of the inheritance of this power, as well as of its unusual development. "He knows a family in which one member, the present head of a family, could, when a youth, pitch several heavy books from his head by the movement of the scalp alone; and he won wagers by performing this feat. His father, uncle, grandfather, and all his three children, possess the same power to the same unusual degree. This family became divided eight generations ago into two branches; so that the head of the abovementioned branch is cousin in the seventh degree to the head of the other branch. This distant cousin resides in another part of France, and, on being asked whether he possessed the same faculty, immediately exhibited his power. This case offers a good illustration how persistently an absolutely useless faculty may be transmitted." The extrinsic muscles which serve to move the whole external ear, and the intrinsic muscles which move the different parts, are in a rudimentary condition in man, and are also variable in development. Mr. Darwin has seen one man who could draw his ears forward, and another who could draw them backward. He remarks that from what he was told by one of those persons, it is probable that most of us, by often touching our ears and thus directing our attention toward them, could after repeated trials recover some power of movement. There is a little peculiarity in the external ear, pointed out by a celebrated sculptor, which is common to man and to monkeys. This consists in a small blunt point, projecting from the inwardly folded margin, and visible when the head is viewed from directly in front or behind. These points are variable in size and position, standing either a little higher or lower, sometimes occurring on one ear, and net on the other. Mr. Darwin concludes that the occasional reappearance of this feature in man is a vestige of formerly-pointed ears, a dim sense of which was doubtless the origin of the legend which Hawthorne has turned to such admirable account in his weird creation of the "Marble Faun."

Mr. Darwin mentions as a noteworthy circumstance that the posterior molar or wisdom teeth appear to be tending towards the rudimentary state in the

more civilized races of man. These teeth are rather smaller than the other molars, as is the case with the corresponding teeth in the chimpanzee and the orang. They have only two separate fangs, and do not cut through the gums, till about the seventeenth year. They are much more liable to decay, and are earlier lost than the other teeth. In the Milanian races, on the other hand, the wisdom teeth are usually furnished with three separate fangs, and are generally sound. They also differ from the other molars in size less than in the Caucasian races. The difference between the races is accounted for by the fact that the posterior dental portion of the jaw is shortened in those that are civilized, and this shortening may be attributed to the habit of feeding on soft, cooked food, and thus making less use of the jaw. In illustration of this point, Mr. Darwin was informed by a distinguished American traveler that it is becoming quite a common practice in the United States to remove some of the molar teeth of children, as the jaw does not grow large enough for the perfect development of the normal number.

The bearing of the argument from the existence of radimentary organs in the human system is easy to be understood. The homological construction of the whole frame in members of the same class is intellisible, if we admit their descent from a common

progenitor, together with their subsequent adaptation to diversified conditions. On any other view it is impossible to account for the similarity of pattern between the hand of a man and monkey, or for the foot of the horse, the flipper of the seal, or the wing of the bat. It does not help the matter to say that they have all been formed on the same ideal plan. Nor can any explanation but that of a common progenitor account for the wonderful fact that the embryo of a man, a dog, a seal, or a bat can at first hardly be distinguished from each other. The presence of rudimentary organs only becomes intelligible when we suppose that a former progenitor possessed the parts in question in a perfect state, and that under changed habits of life they were greatly reduced. We are thus enabled to see how man, and all other vertebrate animals have been constructed on the same general model, why they pass through the same early stages of development, and why they retain certain rudiments in common. Hence, argues Mr. Darwin, we are bound 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 illusion to lead the judgment astray.

The questions suggested by a comparison between the mental faculties of man and the lower animals present more serious difficulties on the theory of Natural Selection than those involved in their physical differences and resemblances. Even Mr. Wallace, one of the ablest supporters of the doctrine, who was led to its adoption by his own independent personal researches as a naturalist, hesitates to apply it to the explanation of the phenomena of mind, at least to the extent to which it is carried by Mr. Darwin. But the latter makes no exception to the sufficiency of the principle. His reasonings concerning its application to the mental powers are marked by singular ingenuity, and doubtless form the most significant portions of the present volume, although there are few thinkers but will pause before admitting their validity. He takes the position that there is no fundamental difference between man and the higher mammals in their mental faculties. As man possesses the same senses with the lower animals, his fundamental intuitions must be the same. He has also some instincts in common with them, as that of self-preservation, sexual love, the love of the mother for her new-born child, and so forth. But man has perhaps fewer instincts than those possessed by the animals which come next to him in the series. The lower animals, like man, evidently feel pleasure and pain, happiness and misery. There is no happier sight than that of young animals, such as puppies, kittens, lambs, and the like, when playing together, like our own children. The lower animals are excited by the same emotions as ourselves. Terror, for example, acts in the same manner on them as on us. causing the muscles to tremble, the heart to palpitate, the sphincters to be relaxed, and the hair to stand on end. Suspicion, the offspring of fear, is eminently characteristic of most wild animals. Every one knows how liable animals are to furious rage, and how plainly they show it. The love of a dog for his master is notorious. Animals not only love, but have the desire to be loved. They feel emulation, and love approbation or praise. A dog carrying a basket for his master exhibits a high degree of pride. The dog also feels shame, as distinct from fear, and something very like modesty when begging too often for food. Several observers have stated that monkeys certainly dislike being laughed at; and they sometimes inventimaginary offenses. A baboon in the Zoological Gardens always got into a rage when his keeper took out a letter or book and read it aloud to him; and his rage was so violent on one occasion which Mr. Darwin witnessed himself that he bit his own leg till the blood flowed. Animals enjoy excite-



