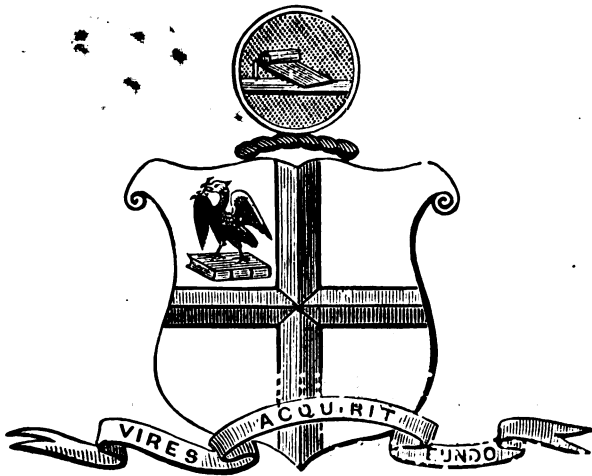


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# INAUGURAL ADDRESS.

By J. BIRKBECK NEVINS, M. D. LOND., PRESIDENT.

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M A N :

*Part 1st*—HIS ORIGIN.    *Part 2nd*—HIS FUTURE.

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PRELIMINARY.

THE great scientific gathering of the year has again taken place since we last met, and I will endeavour to bring before you some considerations connected with the topics which were there discussed, and the reception they met with.

With respect to the meeting itself, it was a noticeable circumstance, how few of the great leaders of scientific thought took an active, or indeed any, part in the proceedings; for though Huxley, as the retiring President, was of course there, he took little part in the discussions during the meeting. Owen was there, and I believe did not speak at all. Darwin, Grove, Hooker, Tyndall, and Wallace were not at the meeting. Stokes read a paper for a friend, who was absent. The most eminent mathematicians of the day were either absent or silent. No geographer of popular eminence was at the meeting; and there were no new chemical or scientific experiments shown, which impressed themselves upon the popular mind. Those visitors, therefore, who went to Edinburgh with the hope of seeing or hearing the great movers of thought in the scientific world, would be, to some extent, disappointed, from their absence or their silence.

The Sections which attracted the largest audiences were those in which Life, and its phenomena or interests, were discussed; and in the Anthropological Section it was sometimes difficult to obtain even standing room, whilst the interest of the audience was manifested in a manner not usual in scientific meetings; for the various sentiments expressed were received with cheers or hisses, as they happened to be approved or disapproved by the hearers; and at times the uproar was so great, that the President of the Section in vain attempted to keep order. This was chiefly the case when the origin or position of man was in some way or other the subject of discussion; and it appeared as if some of the hearers were so strongly impressed with their own views upon the subject, that the lower the origin, and the more debased the character assigned to humanity, the more enthusiastic were the cheers; whilst, as was natural, these were met by dissentient cries, which could find no adequate expression except in downright, unequivocal hissing.

The origin of Life itself, as distinguished from the origin of Man, excited, on the contrary, little interest. The speakers were few, and without enthusiasm in their subject. The audience was listless, and seemed wearied with the topic. The leaders in Biological studies held aloof from the discussions, with the exception of Bastian on the one side, and Grace Calvert on the other; and the general opinion appeared to be that the matter had been sufficiently discussed for the present, that there was nothing convincingly new on either side, and that it may now be allowed to rest for a season.

#### PART I.—THE ORIGIN OF MAN.

There are probably few persons who have not entered, more or less, into the question of the origin of Man, which has been so prominently brought forward of late; and there are many who look upon it with a feeling of doubt, distrust,

or of positive repugnance; so opposed to all our earlier beliefs are the statements put forward by high authorities, and so difficult is it for those who believe in the high parentage and destinies of man, to concur in the conclusions of those who would carry back his descent through the apes and still lower forms of mammalian life, down to the lowest forms of fishes, and through them to a creature of aquatic origin, which is amongst the lowest in the scale of animated beings.

I will now endeavour very briefly to indicate the facts, and the arguments based upon them by the advocates of man's low origin; and point out some considerations which, I think, are overlooked by those who regard the matter solely from a naturalist's point of view, but which ought to be duly weighed by naturalists, as well as by others, unless they would be content with an imperfect and one-sided view of this important subject.

The *general structure* of the human frame is so similar to that of the mammalia generally, as to indicate a close degree of relationship; for it is felt that if two living beings closely resemble each other (especially in features that may be considered of no special importance to either of them), the resemblance is probably due to both having descended from some common ancestor. And such resemblances are found in the case under consideration; for man possesses seven bones in his neck (a singular number, for which there is no obvious reason), and so also do all the apes, and the carnivorous races generally. The cameleopard has but seven in its long neck, and the elephant and the mole have the same number in their short necks. Every ruminant animal has also seven; and so have also the whale and the porpoise, whose resemblance to man in external character is almost inappreciable.

If the *hand and arm* of man are compared with the fore-leg and foot of quadrupeds, of whatever class they may be, the similarity in the number of the bones, and their arrangement, is so great as to leave no doubt of the substantial correspondence; and in the flapper of the whale or the porpoise, the correspondence, even to the bones of the fingers, is still strikingly manifest. Now, as no apparent object is attained by this similarity of bony structure in animals so widely different, it is more reasonable to attribute the resemblance to their having sprung from some common origin, than to suppose that an Intelligence, capable of such a manifestation of power, would have created so many different beings independently one of another, and yet all agreeing in characters which answer no beneficial purpose in their economy. It is evident that, if this line of argument applies to animals lower than man, it will equally apply to him, so far as he is a member of the world of animal life.

And if, turning from these varied beings in their native and perfect condition, we examine them in their most *rudimentary state*, we find that the resemblance in their earliest embryonic condition is so great, that it is for some time impossible to distinguish them; and that the highest pass through various temporary stages of development, which closely correspond with the permanent conditions of lower forms—man himself being at first without a trace of limbs however rudimentary, and having his spine terminating in a free tail, which is for some time longer than his legs, even after these organs eventually make their appearance. The human foetus is also covered with a fine down at a certain stage of its development; and it is not uncommon to find that children at their birth have downy hair on parts of the body, from which it disappears during the early period of infancy; from which it is inferred that man is derived from some ancestor having a tail, and covered with hair.

*Objection.*—“The various classes of animals are constituted upon an intelligently modified plan.”—And *Answer.*

If it should be said, in answer to this conclusion, that the Intelligent Author of Creation has proceeded upon a definite plan, and modelled the different classes of animals upon the same general type, varied according to the beneficial requirements of each, a number of facts are brought forward of a different character from the above, and all in the direction of *irregularity*, and *departure* from the *ordinary plan* which is assumed as that which has been intelligently adopted by the author of nature. These facts come under the general head of monstrosities, or accidental and irregular parts; and the inference from them is still in the direction of showing a common parentage for the very varied forms of animals now existing.

*Muscles.*—It happens so frequently as to have been commonly observed, by writers on human anatomy, that various muscles are sometimes found in the limbs and other parts of the body, which are not generally present. They are an exception; and it may be a comparatively rare exception; but still, their occurrence is so frequent, that it cannot be regarded as accidental. And on pursuing the investigation more widely, it is found that these irregular, and only occasional muscles in man, are ordinary and constant in apes or other animals; and the inference is drawn that they are occasionally present in both, because both are descended from some common ancestor, which possessed them as a natural part of its frame. It is abundantly proved that such great differences may be artificially produced in animal and vegetable forms, that the original parentage shall be almost lost in appearance; but that the original features occasionally re-appear, and prove the descent of the altered form. Just as it is often seen that a child shall have little resemblance to its parent, but a grandchild, or even still more

remote descendant, shall exhibit some characteristic feature, which unquestionably indicates its remote parentage.

In the *bony system* of man, it happens occasionally that various unusual circumstances are noticed ; such as bones in separate portions, which are generally united into one mass ; or bones pierced by holes, or otherwise marked, where these holes or markings are not naturally present ; and these unusual conditions of the bony system are found to be the ordinary natural condition of some of the lower animals.

If we turn still further to the *internal organs* of man, it is found that they occasionally exhibit departures from the ordinary human form, which are, however, merely the natural condition of animals lower in the scale of creation. Such are the occasional occurrence of a double uterus as a monstrosity in the human system, though it is the normal condition of this organ in many quadrupeds.

The *canine teeth* in man are generally small, and perfectly useless as organs of offence or defence ; and they are generally contained within the mouth, and form an even, unbroken row with the incisors and molars. But cases now and then occur in which they are so large as almost to resemble the tusks which these teeth really form in many animals ; and a gap, or space, exists in the opposite jaw to receive them when the mouth is shut, just as is naturally the case in the gorilla and other animals, whose relationship to man is thus pointed out.

These variations are so numerous, and so important in the inferences to be drawn from them, that naturalists are no longer able to overlook them, or to consider them as accidental ; but they regard them as proving a common descent, however the differences now existing in the animal world may have been brought about.

And when, leaving the merely corporeal part of the living

animal, naturalists turn to the *mental characteristics* observed in various classes of living beings, they find so-called natural instincts of affection for their mates and offspring present throughout the various classes of animals, and often even more strongly developed than in man. For whilst wife-beating, and even killing, is but too common amongst so-called civilised nations, and infanticide is a custom which has prevailed in almost every known period of human history, such treatment of their mates is unknown in merely brute life, and Darwin speaks of infanticide almost as if it were a prerogative of humanity, being, according to him, confined to the human race. Social affection is so common amongst animals as to require no proof; combination for mutual defence or for attack upon enemies; faithfulness and affection to their masters or companions, even though not of their own kind; curiosity as manifested in monkeys; caution and wisdom, gained from experience, as in animals subjected to the attempts of hunters; and so many proofs of reason, that it is no longer attempted to deny the possession of this faculty, in some degree, by many if not most animals. Shame, or vexation, on failure in accomplishing what has been attempted, or in having committed a fault, as is continually seen in trained horses and dogs; emulation and pride; vanity in some, and trusting confidence in others, are some of the mental characteristics in which man and the lower animals resemble each other, and are thought to indicate that the difference between them is in degree, not in kind, and that the difference is not always in favour of the human race.

Considerations such as these have convinced many, I think we may say most naturalists of the present day, that, in some way or other, there is a common parentage for, at any rate, the mammalian division of nature, including man within its limits.



The AGENCIES which are supposed to be capable of producing the development of man from some previous low form of animal life, are three, viz.—

NATURAL SELECTION, SEXUAL SELECTION, EVOLUTION.

*Natural Selection.*—By the first of these terms is simply to be understood “the survival of that living being which is best adapted to the circumstances in which it is placed;” and when we examine the manner in which it is supposed to operate, we find that very great changes are capable of being produced in living forms, provided—and this is an indispensable provision—provided that the change is beneficial to the individual, by increasing its chance of life, and its escape from the various circumstances that cause the death of at least five out of every six living beings, produced on the earth. If, then, a change occurs in a living being which is simply useless in maintaining its life, and still more if the change is positively injurious, such a change cannot have been brought about by Natural Selection. We shall have to refer hereafter to such useless or injurious changes in the case of man, when we try to apply this principle to account for his development.

The principle of Natural Selection operates as follows, when taken in concert with three laws of living beings, about which there is no dispute whatever, viz.—1st. That there is so much diversity amongst all things living, that no two are precisely alike, however closely they may resemble each other in general. 2nd. That the characteristics of a parent are generally more or less transmitted to the offspring. 3rd. That out of every half-dozen living beings produced, only about one survives, the remainder falling a prey to other living beings, or dying from want of vigour or of sustenance, or from some other cause of destruction.

Let us now see how these laws, aided by the so-called

“Natural Selection,” produce the results attributed to them. Let us suppose a litter of six young animals. One of these will have a slightly more hardy constitution than the others; and, under ordinary circumstances, this will be the one of the half-dozen that will survive. But another may have slightly longer legs than the rest; and therefore, if prey is scarce and fleet of foot, these long legs will give an advantage over original strength of constitution, and the long-legged animal will be the survivor rather than the hardy one. Another may be stronger in the jaws, and have rather longer teeth; and if prey is vigorous, instead of fleet, the strength of teeth and of jaw will give an advantage over original hardiness of constitution or length of limb, and this will be the survivor, rather than the other. Another may be a little more hairy than its fellows; and if the season is cold and severe, this extra clothing may more than compensate for the before-mentioned advantages, and the hairy one will be the survivor. And, lastly, one may be the smallest and most puny of the lot; but if the mother’s food or strength should fail, the hardy vigorous offspring may make such demands upon her that she deserts or kills them, as sometimes happens; or they may perish because they cannot obtain sufficient support; while the puny one, which makes but little demand and is easily satisfied, may obtain sufficient for its needs, and thus become the survivor, from its very insignificance and apparent want of advantages.

But since parental characteristics are more or less transmitted to offspring, the hardy animal would have a generally hardy brood, and the hardiest of these would survive under ordinary circumstances, and so a race would be produced, gradually increasing in constitutional vigour. Again, the long-legged animal would have a generally long-legged brood; and under the circumstances supposed of swift prey, the longest legged of these would survive, and thus a long-

legged race would eventually be formed. And so of the hairy and the puny offspring. Under the varying circumstances supposed, several differing races would spring from the same original parent, and might at length become so diverse that it would be difficult to trace the relationship between them.

It is evident, however, from the above description, that natural selection can produce no change but such as is beneficial to its possessor, and assists him to survive in spite of the difficulties which carry off five out of six or even more of its fellows; and therefore, whilst natural selection might produce characters, such as a dull colour, that would aid concealment in animals habitually preyed upon, (because this would increase their chance of escape,) it could not produce bright or striking colours, that would lead to instant detection, because these would lessen the chance of escape, and tend to ensure more rapid destruction. Yet such characters are found abundantly in nature as do not in any known way contribute to the safety of their possessor, but are rather a source of danger; and therefore some other principle must be found to account for this phenomenon in nature.

*Sexual Selection.*—The necessity for an explanation of a great variety of characters, which do not assist towards the survivor of the possessor, such as the plumage of the humming birds or the beard of man, brings us to the Second Principle which is assigned as producing the vast variety amongst the beings assumed to have descended from the same original parents, but having so little resemblance to their ancestors, or to one another, that it is difficult even to conceive the steps through which the conversion has been effected. This principle is styled “Sexual Selection,” and may be briefly described as including every character that can assist in gaining or in keeping a mate, whether male or female. As an illustration, may be taken the plumage of

birds. Of two birds, it may be assumed that one has a little more mottling in its tail feathers than the other, and has also the power of erecting the feathers to exhibit their colours. They both exhibit their charms before the female, who is pleased with the bright colours, and selects their owner as her mate. The offspring have a general resemblance to their father; but one is rather more gaily coloured, whilst another is less so than its parent, and again the gay feathers carry the day; and eventually the peacock, with its splendid tail, is the result, whilst the peahen retains its modest, sober colours, because she has no occasion to make much of her charms in order to obtain a mate.

But, to take another illustration; many males are not content with simply exhibiting their charms, and leaving the females to choose, but they fight, in many cases to the death, for her possession; and therefore the strongest will have the advantage, and such characters as are specially advantageous for gaining or retaining her will be gradually developed. And thus, for example, the antlers of the male deer are supposed to have arisen; because they are attractive in the eyes of the female, and give an advantage in fighting with rivals, although they are in many cases a source of danger rather than of safety, and therefore could not have been produced by the agency of natural selection, but are due to the operation of the so-called sexual selection. If, therefore, a character is present which is rather a bar than an attraction, it cannot be produced by "sexual selection;" and if it is rather injurious than beneficial for the survival of its possessor it cannot have resulted from "natural selection."

When, however, these two principles are applied and extended to their utmost limit, it is found that they are inadequate to account for the diversity of life existing in the world, and therefore a further principle must be invoked; for, whilst natural selection might produce all the varied forms of the

ruminant order, it is inconceivable how it could change them into the feline tribe, or the quadrumana; and whilst sexual selection might deck the world of birds with their splendid plumage, it is inconceivable how it could convert the comb of the cock into the antlers of the stag. A further principle therefore, is invoked, to which is attributed greater influence than either, or both of the others, and this is termed "Evolution."

*Evolution.*—The definition of this term, as given by its great expositor and advocate, Herbert Spencer, is as follows :

"Evolution is an integration of matter, and concomitant dissipation of motion, during which the matter passes from an indefinite, incoherent homogeneity, to a definite, coherent heterogeneity, and during which the retained motion undergoes a parallel transformation." *First Prin.*, 2nd ed. p. 396. This definition will scarcely, however, make it evident how the great results attributed to it (such as the evolution of man from the lowest ascidian) are brought about, without some further explanation, which I will endeavour to give as briefly as possible.

All matter is at first homogeneous, and possesses the property (though how obtained is not explained) of "Evolution," which may be briefly described as the power of gradually cohering together more closely than at first, and, during this stage of aggregation and contraction, of producing various off-shoots, or departures from a regular mathematical figure. As the aggregation progresses, so also does the development of more and more complicated forms from the aggregated mass, until at length the complication of the result is almost inconceivable; and this principle applies to all nature, animate and inanimate, mental and corporeal.

Let us now try to illustrate these processes, so as to render them a little more intelligible.

The universe is assumed to have been occupied by a diffused homogeneous substance, or the nebulous matter of the nebular hypothesis. This gradually contracts or aggregates, and the molecular motion which originally kept the particles asunder is dissipated, until at length a more coherent substance is the result, viz., the sun and planets, &c., well-defined, aggregated masses, derived from the nebulous matter, which was less aggregated and undefined. Now this aggregation may produce a sudden change of condition, as when a salt in solution passes at once from the fluid to the solid condition, producing a crystal, or other solid body. In this case the aggregated body is not affected by disturbing or secondary forces, and its form remains permanent, and a crystal retains its character unchanged.

But if the process of solidification is gradual, the mass at some time or other will be so plastic as to admit of change of form, and yet so firm as to retain more or less permanently the altered figure produced by secondary forces acting upon it. Thus the fluid molten earth, gradually cooling down, became at length of such a plastic consistence externally, as to allow secondary forces to produce irregularities, mountains and valleys, &c., and yet sufficiently firm to retain these irregularities. In the language of the theory, "the indefinite, homogeneous, nebular matter, parting with some of its motion, became a definite, heterogeneous or variegated mass." But as time goes on, these original heterogeneities become still more complicated, and the mountains and valleys become more and more irregular, and greater and greater diversity is the result in inorganic matter.

If, however, during this period of coalescence or aggregation, gases rather than vapourised solids should combine, a different result is produced. The molecular motion in gases is much greater than in solids, and is more slowly lost; and therefore masses composed chiefly, or in great part, of

gaseous constituents will retain their plastic or changeable condition still longer, and will be much more changed in form and character by the secondary forces which act upon them, wherever these forces may come from. Now such aggregates of chiefly gaseous components constitute what is called organic matter, which is much more easily changed in many ways than inorganic matter. One of these secondary forces acting upon it is called "Life," by the advocates of vital force; but when or how the force first begins to act upon the nebulous matter I have not learnt from the expositor of the theory of "Evolution."

Under this secondary force, however, this plastic matter undergoes the same character of changes as those already described, but in a much greater degree; which may be illustrated as follows. The indefinite, homogeneous nitrogen, carbon, water, &c., lose their molecular motion and become something more definite and heterogeneous, or varied, viz., the germinal mass and albumen—say of an ovum. These are at first almost homogeneous in structure, the cells of which they consist being pretty uniform in figure and chemical composition. But under the influence of this disturbing secondary force, some of the cells divide, and become smaller and more numerous,—that is, more varied and heterogeneous,—and the power of division and multiplication continues until at length the cells form a groove, the future spinal cord; this forms segments, the spinal column; further separation and heterogeneity results, and a digestive and circulating system appear; the process of evolution still continues, and projections appear that may be arms, legs, or wings, for they are all alike at first; but evolution, *i. e.*, the aggregation of shapeless matter, accompanied by definiteness and diversity, progresses, and the homogeneous projections become heterogeneous limbs of various kinds.

This system of evolution is progressive, and the simple

homogeneous central ganglia become divided and multiplied, and more and more complicated, and then higher and higher forms of brain are the result. And as thought and feeling are the result of nervous changes (though how they should be produced by molecular motions, is acknowledged to be utterly inconceivable even by the most cultivated imagination), so the thoughts become more and more varied, and wider in their range. The modes of expressing these thoughts become more and more varied, and language evolves from the simple nouns of an infant or a savage, to the complex speech of the educated man. Art, as an offspring of thought, becomes more distinct and varied; and the sculpture, painting, and music of the present day were evolved from the simpler art of primitive times. Government, or the social condition of man, is evolved; so that the indefinite homogeneous ruler of old times is evolved into the heterogeneous rulers of modern times; and the indefinite homogeneous compound of king, legislator, priest, and warrior in one man, separates into the definite heterogeneous development of several men called King, Prime Minister, Archbishop, Commander of the Forces, Magistrate, Superintendent of Police, &c.

Thus, throughout every department of nature, this law of evolution prevails, viz., that more complex and higher forms are evolved from more simple and lower ones; and this process will continue until a result of completeness and perfectness, or of separation into ultimate dissolution and decay, is reached. Which of these it shall ultimately be, the theory does not shew.

In its application to our present inquiry its bearing is, that, as a result of this law of nature, low forms of animal or vegetable life evolve more complicated and higher ones, without any known limit to its operation. Hence, therefore, man may have been, and many boldly assert has been, evolved



by natural descent, through the man-like apes, from the old-world monkeys ; at a long interval from the marsupials ; more remotely still from fishes ; and, still more remotely,—and here for the present his genealogical tree starts,—from the low aquatic creature, the ascidian.

*What amount of confidence is to be placed in these three Laws ?*

Having now examined the agencies by which the development of man is said to be possible, even if not actually to have been produced, we are in a position to enquire what amount of confidence the proposers of these various theories place in them themselves. And, to begin with the last-mentioned, viz., Evolution.

*Evolution.*—Herbert Spencer says (*First Principles*, 2nd ed., pp. 340, 341):—“Hence we may say, that though our knowledge of past life upon the earth is too scanty to justify us in asserting an evolution of the simple into the complex, either in individual forms, or in the aggregate of forms ; yet, the knowledge we have, not only consists with the belief that there has been such an evolution, *but rather supports it than otherwise.*”\*

It is, indeed, but a feeble confidence that we can place in a theory, when its very proposer is obliged to limit himself to the conclusion that the knowledge we do possess only “*rather supports it than otherwise.*”

Still further, in his work, Mr. Spencer speaks in not less guarded, we may perhaps say equally doubtful, terms, about the support given by facts to another portion of his theory (*First Principles*, 2nd ed., p. 370). “To prove that the earth’s Flora or Fauna has progressed in Definiteness, is no more possible than it was to prove that they have progressed in Heterogeneity ; lack of facts being an obstacle to the one

\* The Italics are my own, not Mr. Spencer’s.

conclusion as to the other. If, however, we allow ourselves to reason from the hypothesis, now daily rendered more probable, that every species, up to the most complex, has arisen out of the simplest, through the accumulation of modifications upon modifications, just as every individual arises, we shall see that there must have been a progress from the indeterminate to the determinate, both in the particular forms and in the groups of forms." That is to say, *there are not facts to prove what we advance*, viz., that the highest forms are developed from the lowest; *but if we accept the hypothesis of evolution*, we shall see that this result must have happened.

It is unfortunate for the author of a theory, when he is obliged to confess that he has not facts from the past to prove its truth; and that such knowledge as we do possess does but "rather support it than otherwise." And it is still more unfavourable if all the inferences from present experience are opposed to it, and nothing can be proposed in the way of experiment, to prove that it will receive more support from the experience of the future than of the past. For the phenomena of life, both animal and vegetable, are, and have been, so strongly in favour of permanence, and opposed to change, either in the direction of increased definiteness, or of increased complexity, that the study of nature, as we are able to observe it, or of experiments, as we can institute them, tends to show that, *when the influence of a controlling mind is withdrawn*, permanence, and not evolutionary changes, is the law of life, as at present existing. And, although it is undisputed that individual life progresses in the direction attributed to evolution, from its earliest embryonic condition to its maturity, we are obliged to confess our inability to see the proofs of this evolutionary theory, as a continually operative law, in races of living beings, whether animal or vegetable.

*Natural and Sexual Selection.*

Darwin, (*Origin of Man*, vol. 1, p. 137, *et. seq.*) says:—  
 “Man manifestly owes his immense superiority to his intellectual faculties, his social habits, and his corporeal structure. . . . Through his powers of intellect, articulate language has been evolved; and on this his wonderful advancement has mainly depended. He has discovered the art of making fire, which discovery, probably the greatest excepting languages, ever made by man, dates from before the dawn of history; and these several inventions are the direct result of the development of his powers of observation, memory, curiosity, imagination, and reason.” And the following are the steps, according to the same author, by which his corporeal structure, and his discovery of languages and of fire, have been made:—“As soon as some ancient member of the Primates came to live less on trees, and more on the ground, it would have had to become either more strictly quadrupedal or bipedal. Man alone has become a biped; but he could not have attained his present position in the world without the use of his hands; and they could scarcely have become perfect enough, as long as they were specially adapted for climbing trees; for such rough treatment would have blunted the sense of touch, on which their delicate use largely depends. It would, therefore, have been an advantage to man to become a biped, and to gain this great advantage, the feet have been rendered flat, and various other changes have been produced, connected with man’s erect position.” That is to say, so far as I can master the argument:—“We find an animal that has a superiority over all other races, and there is no doubt (though we are not able to prove it,) that he is a descendant of those ancient primates; but he could not obtain this superiority without having flat feet and perfect hands, and therefore he gained them, though we are not able to show the steps by which it was accomplished.”

I have searched Darwin's book carefully, and I confess my inability to find a more direct proof of the manner in which these changes were affected, than that it was necessary that the ape should so change, in order to become a man, and therefore he did so.

Next, as to the discovery of articulate language Darwin says (p. 54, *et seq.*):—"Articulate language is peculiar to man. When we treat of sexual selection, we shall see that some early progenitor of man probably used his voice largely, as does one of the Gibbon apes of the present day, to express various emotions, as love, jealousy, triumph, &c.; and the imitation by articulate sounds of musical cries might have given rise to words, expressive of various complex emotions. And it does not appear altogether incredible that some unusually wise ape-like animal should have thought of imitating the growl of a beast of prey, to intimate to his fellow-monkeys the nature of expected danger; and this would have been a first step in the formation of language." That is to say, assuming the existence of the unusually wise ape, he growls like a lion, and thus lays the first step in articulate language, which distinguishes man from all other creatures; though, as Darwin observes, a few pages afterwards, (p. 59,) "The fact of the higher apes not using their vocal organs for speech, no doubt depends on their intelligence not having been sufficiently advanced." The reasoning appears to me, so far as I can follow it, to be: "Man is doubtless descended from an ape; but he has articulate speech which apes have not, because they have not brains enough; therefore, some unusually wise ape must have begun to imitate the sounds made by other animals—who, also, do not speak—and thus laid the foundation of language."

At this point we turn again to Darwin himself, who dwells at large upon the increase that would take place in man's intelligence [and brains, when once he had begun to use

articulate speech—which is probable enough. The first grand difficulty of beginning to speak being got over, there is little difficulty in the subsequent advance, both in intelligence and language; the two going hand in hand.

The discovery of fire, by the ape-like ancestor of man, is attributed by Darwin to some monkey having accidentally noticed that, when he happened to strike one flint against another, a spark was produced, and this spark accidentally set the herbage on fire; and the ape, instead of being dismayed, or destroyed by the conflagration, thought of feeding the fire, when it became low, and limited its spread by removing surrounding fuel, and thus learnt to use fire, and employ it for cooking, &c., instead of being destroyed by it. As this theory is based entirely upon assumption, and is unsupported, so far as I am aware, with a shadow of proof, we need not dwell upon it further.

Thus far for the influence of Natural Selection and Sexual Selection, in developing the special characteristics of man. I have endeavoured to represent the author's views faithfully, and will conclude this part of the subject, viz., that in favour of man's descent by ordinary generation from apes, or still lower forms, with Darwin's own concluding words, (vol. 2, p. 405 :)—“The fact of man having risen to the very summit of the organic scale, instead of having been aboriginally placed there, may give him hopes of a still higher destiny in the distant future. But we are not here concerned with hopes and fears, only with the truth, so far as our reason allows us to discover it. And we must acknowledge, as it seems to me, that man, with all his noble qualities, still bears in his bodily frame the indelible stamp of his lowly origin.”

## PART II.—THE FUTURE OF MAN.

The sentence from Darwin, which I have just read, “We are not here concerned with hopes and fears, only with the

truth," and the following sentence from Huxley's celebrated Edinburgh lecture, "Why trouble ourselves about matters, of which, however important, we do know nothing and can know nothing?" will furnish the basis for my concluding remarks; for they appear to me to show that these enquirers (earnest enquirers after truth, we cannot for a moment doubt them to be) have become so much accustomed to regard the subject of man from one point of view only, that they leave out of sight, as if it did not exist, other knowledge that we possess of man, though derived from a different source than that of tracing his descent through the region of comparative anatomy.

*Man must be studied as a whole, not as a mere animal.*

If we would study the whole truth, we must take man as he is, body, soul and spirit, whatever his origin; and not simply regard him in his supposed descent, as a mere animal, from some remote ancestor. If the parentage assigned to him in the foregoing pages can be proved to be true, it must be accepted without fear and without hesitation; for we are sure that the truth can never be an occasion for fear to a truthful mind. And if it be absolutely true that man is descended by natural generation from an ape, there is nothing in this really to shock us, more than our former knowledge that his body is composed of the same materials as the inorganic world around him, and that it is sustained through the nutriment derived from the lower animals upon which he feeds. But before giving up our old beliefs, and renouncing all the hopes and fears with which we really are very deeply concerned, we ought to be very sure that the teachers of the modern philosophy have not overlooked anything which constitutes man, and have not presented to us only a part instead of the whole of the being, in whose present and future we are so momentarily involved.

Now, if we take man as he is, we must not confine ourselves to the lowest and most degraded savages, who form but a portion, and that by far the smallest portion, of the human race, but we must take him in his highest manifestation as well as his lowest, and see what his constitution then is. We have then to account for a being who differs corporeally from all known animals, recent or fossil, in at any rate the following particulars. He is naked, whereas all other animals are naturally clothed. He differs from all known animals in his hands and feet, and the correlated parts of his frame; and his brain, with which all naturalists associate some correspondence in mental power, is incomparably larger in proportion than that of any known animal; the difference being so great, and so entirely unbridged over, that, so far as our knowledge goes, it is entirely without explanation how the difference has arisen. And when we consider his mental characteristics, we find that he has, what is confined to him alone of living beings, not only a remembrance of the past, but also anticipations of the future—anticipations accompanied by hopes or fears, which are so universal in the race that we have no more right to disregard them, as constituting part of his nature, than we should have to disregard the sense of vision in fishes, because some are without eyes.

Now if we enquire whence these peculiarities are derived, we obtain no answer from Natural Selection, Sexual Selection, or Evolution. For, first as to the *naked skin*; Natural Selection can produce nothing but what is decidedly beneficial to its possessor: but the nakedness of man is not beneficial, but is rather injurious to him, in whatever part of the world he may be; for it is abundantly proved\* that, even when he does not require clothes for warmth, he needs them and uses them as a shelter from rain and from heat; and there-

\* Wallace, *Contributions to Natural Selection*, p. 346.

fore Natural Selection is powerless to produce this peculiarity. And the same may be said of Sexual Selection; for the only conceivable benefit it could be, would be to render him more attractive to his mates. But so far is this from being the case, that in nearly all regions of the world the nakedness is more or less covered artificially. And because it is so wanting in attractions, man borrows the coverings possessed by other animals in order to obtain favour in his companions' eyes, and decks himself in the skins of animals or the feathers of birds, or ornaments himself, and hides his deficiency by painting and adorning his skin, so as to render his nakedness less apparent. And "Evolution" also fails to account for it; for it answers to none of the conditions involved in that law of development.

And if, leaving out of the question man's hands and feet, for the origin of which Natural Selection gives a sorrowfully meagre explanation, and Evolution none, we turn to man's brain, we are again met with the fact that its capacity is so out of all proportion to man's needs as a mere animal, or as an uncultivated savage, and is so widely removed from every modification that the known influence of Natural Selection or Evolution could produce, that we are bound to admit, if we are merely concerned with the truth, that no known natural agency has been capable of producing it, and that some agent has fashioned it, which is not simply natural organic descent.

And if, from his corporeal structure, we turn to man's mental characteristics, we find in his conscience what is barely represented even in those animals which have been longest under his tuition;\* and in his anticipation of the

\* In his *Origin of Man*, Darwin labours laboriously to show that there are some animals which have a sort of something which he calls conscience; or, at any rate, some sense of right and wrong, which is developed from their social instincts. He has no difficulty in showing that they act under the influence of hope, fear, and affection; emulation and discipline (as in ants and trained animals); and he adduces a few examples of healthy animals, feeding or tending



future, in his hopes and fears, we find what is entirely without representative in the rest of the animal world. And when we ask the advocate of natural selection as the source of man's development whence this characteristic of man arises, he ignores the whole matter, and replies, "We are not concerned with hopes and fears." And if we inquire from the exponent of physics as the only base of life, what he can teach us, he answers, "Why trouble ourselves? If a man asks me about the politics of the inhabitants of the moon, I answer that I do not know, and I decline to trouble myself about the subject at all." But man, simple, unlearned man, and the philosopher also, notwithstanding this denial, is concerned with hopes and fears, and does trouble himself for an answer. And it is worth while to ask, "Is it really true, or is it only the private assertion of a great naturalist, that we do know nothing, and can know nothing, upon this subject?" Now it is acknowledged that our senses teach us nothing on this matter, and that, if we are to learn anything, it must be from the teaching of some one who knows what our unaided senses cannot teach us.

But in this respect we are only in the same position that we occupy in regard to the teachings of science; for we are told to believe, for example, that in the sun flames of hydrogen twenty-seven thousand miles high appear and disappear in a few minutes; and that some of the stars are moving away from us at the rate of a few miles per second, and we do believe it. But on what authority? for our eye has not seen,

sick ones, to prove that they possess some of the higher attributes of kindness and social qualities. But he fails entirely, as it seems to me, in showing that any animals possess that imperative sense of duty, or of truth, which causes them to make sacrifices, and submit to personal loss, in order to comply with the stern demands of that monitor, which we commonly call conscience, and which manifests itself chiefly as enjoining us that we *ought* to do, or *ought* not to do, what no other faculty gives direction about. On this point, compare Darwin with an interesting chapter in Wallace's *Contributions to Natural Selection*. \*

\* *The Limits of Natural Selection as applied to Man*, ch. x. p. 332. *Truthfulness of some Savages*, p. 358, same Essay

nor our ear heard, neither is it possible for us really to conceive these phenomena. On the authority of some one or two men, who have seen what no one else has seen, and who tell us that it is so. And on what grounds do we believe them? Is it because scientific men have never been deceived or have never contradicted one another? Certainly not; but because those who are supposed to be capable of testing their knowledge say they are to be believed; because they prove their knowledge to a certain extent by explaining obscure phenomena to the satisfaction of our own intelligence; and because, lastly,—and this is the true touchstone of their trustworthiness,—because they foretell with truth the occurrence of future events which do not admit of being guessed at. And if, turning from teachers on such subjects, we turn to teachers respecting our hopes and fears, they must be judged by the same rules; they must be tried by the same tests; and if we are satisfied that they have explained what was previously dark in spiritual matters, and that they have proved by their truthful forecasts of future events that their knowledge was true, then we have at least equal grounds for believing and relying upon their teaching in the matter of our hopes and fears, and in their revelations respecting a future that would be otherwise unknown to us, that we have for believing the announcements of science or the teachings even of naturalists. And if we are possessed of but a little wisdom, we shall follow their instruction how to obtain the future they teach of, as cheerfully as we shall be guided by that of science in our passage over the otherwise trackless ocean. And whether or not our corporeal frame bears marks of its lowly descent and its relationship to the other creatures of the Creator, we shall look forward, and shall rejoice in so doing, to something for ourselves, and for those who have gone before us, far brighter and far more tangible than the prospect contained in Darwin's words, already

quoted; words to my mind inexpressibly cheerless; words which destroy all hope of a future for ourselves, or for the generations gone before us; words which remove all stimulus to that which is good, if it should happen to be accompanied by present self-denial, and all check upon that which is evil, if it is accompanied by present gratification; words, lastly, which reduce ourselves to the level of only more highly advanced brute beasts, whatever they may promise for future generations—"The fact of man having risen to the very summit of the organic scale, instead of having been aboriginally placed there, may give him hopes of a still higher destiny in the distant future." Hopes, that is, for the race of man, but not for himself, after countless future ages of Natural Selection, Sexual Selection, and Evolution.