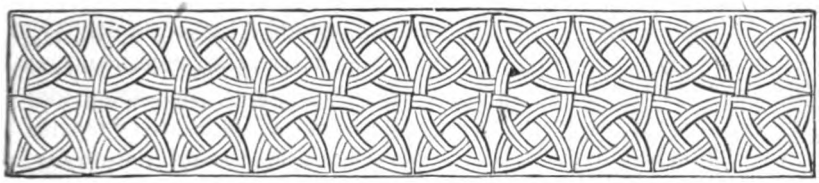

THE BAPTIST QUARTERLY.

DEVELOPMENT AND HUMAN DESCENT.

The Descent of Man, and Selection in Relation to Sex. By Charles Darwin, M. A., F. R. S., etc. New York: D. Appleton and Company. 1871.

The Genesis of Species. By St. George Mivart, F. R. S. New York: D. Appleton and Company. 1871.

THE works cited above,—and we have limited our selection to these two because they may be regarded as representative,—have been so long before the public, and the views of the writers are so generally understood, that the briefest reference to them is all that is required in this place. In the two volumes on the Descent of Man, Darwin applies his theory of Natural as supplemented by Sexual Selection to the question of the origin of man. The object of the work is to prove that man is descended from pre-existing species, and to show the manner of his development and the value of the differences between the so-called races of mankind. The method of proof is by comparison of the different parts of the human structure with like parts of the structure of the lower animals, and by observation of the correspondence in the embryological development, and in the rudimentary organs of the different species. The author's vast reading and laborious accumulation of facts and illustrations bearing on these points are something astonishing. His conclusion is that man is descended, along with all other existing species, from some ancient, lower, and extinct form. The line, he

thinks, can be traced provisionally through the common ancestor of the Old World apes, through the lemurs, marsupials, amphibians, and fishes, down to one of the lowest of the mollusks, resembling somewhat the larva of the modern ascidian. The immediate progenitors of our race had their home on the African continent; they were at that time covered with hair, both sexes having beards; their ears were pointed and capable of movement, and their bodies were provided with a tail; their feet were prehensile, and their lives were passed among the trees of that warm, forest-clad land. Earlier still, the progenitors of this race must have been aquatic in their habits and breathed through gills, while far lower down their ancestors lay in the mud of some tide-visited coast, alternately stuffed with food and then stinted, at regular lunar intervals.

Such a pedigree, the author admits, may not seem to be of noble quality, but we need not be ashamed of our parentage, when we consider what abundant reason we have to be thankful that we are organized beings at all, and not the morganic dust under our feet.*

The greater portion of the second volume is occupied with the theory of natural selection in relation to sex. Sexual selection depends on the success of certain individuals over others of the same sex in relation to the propagation of the species, the elements which chiefly determine the choice of mates being strength and beauty. The advantage will always be with those who possess these in the highest degree. This principle of sexual selection will thus go far toward accounting for the differences between the two sexes in body and mind, and, in a wider application, for the differences between the several races of men, as well as from their ancient and lowly organized progenitors. It is a fact of some significance that natural selection is not regarded by Darwin himself as competent to account for all the facts to which it was first applied, and the principle of sexual selection has now been brought forward and exalted to a coordinate rank with that of natural selection. He has not attempted to define the exact relations between the two and the part played by each in differentiating the different races of men and species of animals, but he has placed them side by side as coequal factors in the long succession of change.

In the concluding chapter the author briefly defends his doctrine of the derivation of man from lower species of life against the charge of materialism and irreligion. It can be affirmed to be materialistic only upon the assumption that spiritual qualities could not be taken on during the process of development, and it cannot be shown to be

* Descent of Man, p. 205.

more irreligious to explain the origin of man as a distinct species by descent from some lower form, through the laws of variation and natural selection, than to explain the birth of the individual through the laws of ordinary reproduction. Charles Darwin, we believe, professes to hold to the ordinary Christian faith, and hence must accept the Scriptures as in some sort a revelation from God. He does not put forth his views as a contribution to infidelity, nor is it our opinion that this theory of the origin of man is in any necessary conflict with the Mosaic account. But we could have wished for a distinct recognition, in some form, of a divine revelation, which, if it does not definitely pronounce on this question, at least speaks about it, and we do not think that a man of science should forget that he owes something to the Christian sentiments of society, and that when advancing views which he must know, if he is not blind to all save his own pursuits, a large portion of that society will regard as subversive of belief in all supernatural facts, he might not with propriety have indicated the method by which he reconciles his scientific theories with his own faith.

The work of St. George Mivart, which presents a different view of the ultimate ground for the variations among species from that of Darwin, will attract the more attention from the fact that the author is himself a distinguished naturalist, and cannot therefore be charged with indifference to the claims of science in the interest of popular theological prepossessions. He admits the truth and value of the theory of natural selection, but assigns it a subordinate place. The final explanation of the present system of things is not, he thinks, to be found in a process of evolution and change under the influence of altered external circumstances alone, but in a process of development by virtue of an inherent tendency to change, which is to be ascribed to the creative will. Mr. Mivart's conception of the physical world is, that it is organic throughout, and that its several parts arise and go forward in one harmonious development, through special powers and tendencies existing in each part, implanted therein from the beginning by the Creator. As to the origin of man, he admits the extreme probability that the body, or animal nature, has been derived from some lower form, but affirms that we have no reason, on account of that, to doubt the Scripture record that the spirit belongs to a different order of existence, not derived, but imparted by the inbreathing of God.

This question of the evolution of life, and especially of humanity from the lower forms of life, is not altogether a scientific one, and cannot be left wholly to science for its final settlement. A higher

rational philosophy must here enter the field of science, and determine for science what is its proper basis and what are the limitations of its method. We propose, therefore, to make a brief examination of the principle of the development theory as it is applied in these volumes to the problem of the derivation of man, with the view to determine, if possible, how far the scientific method is applicable to the conditions of the problem. We are concerned, not with the validity of the arguments, but with the adequacy of the method—not with the process by which the conclusion has been reached, but with the worth of the conclusion itself.

I. It is useless to ignore the fact that the hypothesis of evolution exhibits the direction in which all science is now moving, and in which it must move for a long time to come. Progress is the law of all life and all history. This conception of change, of the evolution of one state more advanced from another less advanced, has been the leading principle of philosophy from Heraclitus to Herbert Spencer. But the true interpretation of this principle is a different thing. What is the basis of evolution itself? Is it material, formal, or spiritual? This is a question which science is not competent to decide. Science begins this side of that problem with things as they are. But, indeed, is any other beginning possible to the human mind? Can we get back of things as they are? and is not the problem of the origin of things and their ultimate relations to be banished altogether from thought to the silent realms of the unknowable? So it has been confidently affirmed of late; but with this problem go of necessity all theistic conceptions of the universe, and something more. The doctrine of the persistence and mutual correlation of forces has been presented from the scientific side, and the doctrine of the relativity of all knowledge from the metaphysical side, as the sole truth, the ultimate fact, of all things. Thus the origin and final cause of the universe, both of matter and mind, are dismissed to the unknown, and the deepest truth we can get at is dependent upon and conditioned by that unknown. The scientific explanation that all forces are interchangeable implies that all being is finite and dependent being, which involves the absurdity of a series of mutually dependent existences, not one of which can support any other, and the dependence of the whole being upon nothing. The series has indeed been declared to be *infinite*, that under the mystery of that word the difficulty may vanish. But science knows nothing of a true infinite, and an infinite series is a contradiction in terms. The metaphysical explanation that all knowledge is relative necessitates an absolute without which a relative cannot be, but an

absolute of which nothing, not even existence, can be legitimately predicated, which is known to be incapable of being known, and by this very incapacity is brought back into knowledge as what it is—namely, the unknowable and the absolute, with a condition upon it. At the same time, this infinite chaos of mutually dependent relatives, themselves capable of being known only by virtue of their relation to this unknown absolute, is affirmed as absolutely existent by faculties capable only of relative affirmation, and is made the basis of exact science. Suppose, now, that this new philosophy is no more absolutely certain than the old, which it seeks to displace, and under the doctrine of the relativity of all knowledge it can claim nothing more for itself, where have we landed? In universal nescience or universal knowledge? It is impossible to decide. If, however, the nescience is no more certain than the knowledge, we prefer for ourselves to resume our former conceptions and take up the former lines of thought where we had dropped them. A philosophy without any valid beginning or valid ending, which starts the other side of any *primum cognitum*, and terminates this side of any *summum genus*, which is suspended thus between two unknowables, from which nevertheless it must derive all the meaning it has or can have, not only conducts us ultimately to nothing, but was good for nothing from the first.

It would not be difficult, we think, to indicate the direction which thought must take to break over these arbitrary limits, but an easier and more direct way with respect to the scientific method is to show that it is inapplicable to the problem, and hence is not at liberty to pronounce for or against. All scientific theories necessarily fall short of absolute commencements. The sphere of science is the closed circle of finite and secondary causes, and out of this it cannot move. It has to take things just as it finds them; hence, it cannot account ultimately for anything, cannot give all the reasons why anything is at all or why anything is as it is. Science is not, therefore, an all-sufficient interpreter of nature. Evolution cannot dispense with creation, though it cannot account for it; a philosophy of development is not a philosophy of origin. No process in things already existing can dispense with the act which gave them existence, nor can the process account for itself, nor eliminate from itself its own essential principle.

If, now, we start with things as they are given, with all the material and with the principle of movement already in existence, we may raise the further question, What is the true law of development, and how does that law operate? The answer of Darwin to the second

part of the inquiry is, By natural and sexual selection. Now, if this answer should prove to be in harmony with all other known truth, and to be the only answer in which a satisfactory account of all the facts could be found, it will then, and not till then, have made itself good. But there is another hypothesis which furnishes an equally satisfactory solution of this problem. It is that which has substantially the support of the great names of Agassiz, Dana, and Owen, viz.: that there is a principle of order running through all nature, resting ultimately upon the divine will, by which the regularity of nature is maintained. This hypothesis has the advantage which must always cleave to every theistic and spiritual interpretation of the universe, that it posits intelligence and not blind force as the principle of all things, and thus falls in with the strongest instincts of the human soul. The other hypothesis works without any basis of its own. The only reason we have for attempting an explanation of nature, for supposing it to be explainable, and so for raising any question as to the origin of species, lies in the instinctive belief that nature is an orderly system of things, and is capable of returning a rational reply to our interrogations. There is some reason for our confidence in the inductive method of science necessary to account for its employment at first, and so some reason which existed anterior to our experience of the results of the method. That reason is the rational instinct of order. We accept every appearance of method in nature in good faith. We anticipate that the laws of nature will operate with steady and uniform force. This all philosophy attests. This science itself attests. Even those who deny that there is permanence to the forms of existence, and accept change, *the becoming*, as their principle, must yet hold fast to the permanence of the principle of change. This at least is steady and abides amid all changes, otherwise change itself would cease. Hence, development, change, is no more the universal method of nature than permanence. The method of nature, in fact, is progress, which is the synthesis of that which abides and that which changes. The principle of change is ever advancing, ever stretching itself before and surpassing the old limits; it is an infinite force behind and working through the development of nature and history, by means of which the development itself is sustained and guided in its way. And what is this which ever abides, this principle of movement which ceases not, but the infinite itself, which appears everywhere in and over the finite forms, and without which the finite would cease? The finite thus reposes on the bosom of the infinite, and would lapse into the infinite but for the eternal movement, the absolute will, by

which it is sustained. "For by him all things consist." The theory of natural selection, which is proposed as the principle of development, must therefore itself be explained by the principle of permanence, and must be classed under the law which it was intended to set aside.

How, moreover, are the classifications of science possible without the assumption of a preordained and persistent order in nature? These classifications are not arbitrary, but are based on permanent resemblances and differences in objects. Science does not adopt any method it pleases, it does not invent an orderly arrangement and progression of facts and events, but it assumes that there is in nature a plan or system, and seeks to fall in with that plan. It assumes—or, more correctly, it finds—that the universe is one grand organism, and that what we see in one part helps us to understand another part. Without this conception of the dependence of part upon part science would be impossible, since there would be no passing by means of thought from one thing to another. The reality of thought-relations between objects must be assumed as the basis of the classifications of science. There is an actual order in nature, a system of life; individual forms of existence may change, and one may pass into another, but the genera and species survive, and reappear in the new forms. One plan reveals itself in all nature, and the development of that plan as a whole has not been by the mere accident of natural selection, but by the permanency and direction of the forces at work from the beginning.

But it is said, The distinctions in objects are not permanent; their permanence is but a seeming, is but relative to us; animal forms do not persist the same through the long ranges of time, but one gradually passes into another. This may be so: we leave it to science to determine the fact; but to what purpose is it urged? If this evolution of life has not taken place according to fixed laws and does not rest on any permanent principle, how could the fact of evolution itself be ascertained? Suppose we were made acquainted with the condition of things in any period of the past; how could we tell by what process that condition came to be what it was? The past could not be understood from anything in the present, nor from what is known could the future be inferred. According to this view, the consummation of science would be the discovery and co-ordination of facts, theories and interpretations would be out of place, and science would build its proudest monuments on and of the shifting sands. So long, then, as it is possible for science to be, and for us to discover and comprehend what were the processes of nature in the

past, the question will return: What was the principle of the process? And whence comes it that there is something so like human intelligence in the works of this world of ours? Has it any objective reality? Or are the generalizations of science, which seem so sternly realistic, but the play of the mind's own fancies, the projection of our subjective laws of thought upon the external world? Grant it true, and what follows? Simply that science must accord with the mind's sense of order. If it does not, it breaks down upon the application of the first condition of an approved hypothesis that it must be consistent with all other known truth. Reason demands uniformity and order in the system of things. The senses present us with objects just as they are, in which any one feature is as important as any other; then the understanding takes these objects of sense and views them in their relations. If this were all, science might restrict its investigations to the relations among phenomena. But this is not all. The reason follows next, and seeks to combine these objects of sense and of thought into one connected and systematic whole. It starts with the expectation of finding unity everywhere. The universe as a whole must make up one system where the parts are all correlated one to another. In other words, the doctrine of "final causes" furnishes the only rational explanation of the universe, and philosophy will not and cannot stop short of that. The human mind accepts the facts of nature in good faith; it assumes that things can be known as they exist. But this is to affirm that they can be known only as they are thought, and this is further to affirm that the outer world corresponds with the inner—in other words, that it is the product of intelligence. If the universe is a system of infinite order instead of infinite anarchy, it is because it embodies the thought of its Creator.

Our conclusion, then, from this part of the discussion is that the problem of the origin of the present system of things, of the cause and the manner of its development, and of the rational end for which it exists—in a word, the problem of the interpretation of nature as a whole and in all its parts—can neither be dismissed nor solved by the scientific method, and yet upon its proper solution the validity of science, quite as much as of philosophy and religion, ultimately depends.

II. It will not do to forget that the Scriptures have spoken on some of the points here before us, and though we should scorn to take refuge behind mere authority, we certainly have no apology to make for passing to consider what this oldest historical record of the

human race—a record claiming for itself also an inspired source—may have to declare. It will be allowed by all that the conception of the universe which shall be in nearest accordance with the teachings of revelation must be spiritual and theistic; while by believers in the divine origin of the Bible it will be maintained that, though the Bible was not given to teach science, yet that mode of explanation which shall be most in harmony with the views which it imparts will be most likely to prove correct in the end. Now, the first thing which strikes the mind is that the sacred writers speak as if they had no suspicion of the antithesis between nature and the supernatural, which has become so familiar to modern thought. The question as to the mode of connection of God with nature must have presented itself to their minds in some form, since nature to them was a reality, a creation of God, and hence a sphere of second causes. The supernatural, indeed, from the object of their mission, was the prominent thing, but it did not exclude the natural; the two are rather conceived as mutually inclusive and parts of one and the same system of things. In the cosmology of Scripture the divine will is not substituted for force and law; nature has its place, and its great movements are carried on in an undisturbed order and for a pre-established end; as the work of God it illustrates the perfections of its Creator, and even—as when made the basis of the parables—becomes symbolic of spiritual truth. But on the other hand, God is not regarded as having exhausted himself and become imprisoned in his own works, nor as shut up to the methods of the material world, but moves as freely as the human will along the line of natural causes; while he fills nature with his presence, he also transcends nature; while he does not interrupt the uniformity of his own plan, he is still a free and infinite Spirit, and sometimes manifests his presence in and his freedom from nature by works of providence and grace for moral purposes.

And thus, while we do not believe that the Scriptures contain any scientific explanation of the origin and order of nature or of the movements of the divine will in the orderly system of things, yet we are intelligently assured that the deepest scientific philosophy will always find room for itself in the teachings of Genesis. The Bible was not written in the interest of any system of science or philosophy, but even the hypothesis of evolution and of the origin of man, so far as he is mere animal, by development, is in no necessary conflict with the Mosaic history. The language of the first two chapters of Genesis is truly remarkable, and may well challenge the deepest attention of interpreters. "Let the earth bring forth grass," "Let the waters

bring forth abundantly the moving creature that hath life," "Let the earth bring forth the living creature after his kind," "And out of the ground"—*i. e.*, of the garden—"made the Lord God to grow every tree that is pleasant to the eye and good for food." This language, taken in its connection, clearly implies that the ancient creation was a process, a growth of some sort. It is expressly stated that the trees of the garden grew up from the ground. Indeed, the preparation of the earth by successive stages and by the work of the six days was, as a whole, a process of development. The earth did not stand forth complete at once; the animals were not created full grown; scarcely

> "Did the grassy clods now calve, now half appear
> The tawny lion, pawing to get free his hinder parts;"

scarcely did

> "The ounce,
> The libbard, and the tiger, as the mole
> Rising, the crumbled earth above them throw
> In hillocks; the swift stag from under ground
> Bear up his branching head."

Great trees were not planted in the soil, but out of the ground, which had itself been slowly lifted above the waters, the Lord God caused them to grow. It is to be observed, however, that the sacred writer never dreamed that, because all this took place by development, it was any the less a special creation. He was superior to the modern insanity of putting the "conditions of existence" in the place of a personal creator. As to the origination of man, it is simply said that God "formed him out of the dust of the ground," in which is implied—in fact, is expressed—that he had a common origin with the animals.

Here, then, is the scientific side of the creation. But the inspired history does not stop with that. It roots nature in law and man in nature, and thus allows all that science can claim or could possess; then it opens for us a higher view. Whether man as a mere physical being was descended from the earlier forms of existence or not must be determined by the investigations of science, but the fact that with Adam began a race having endowments, both intellectual and moral, which were not developed from a lower basis, but were imparted by the Spirit of God, has been definitely settled by revelation, and cannot be unsettled by human opinion. After man had been

formed of the dust, and stood forth mature as an animal being, then "God breathed into his nostrils the breath of life, and man became a living soul." As to his rational nature, he did not spring up from the ground, was not the product of pre-existing materials and forces, but came directly from the bosom of God bearing the image of his Author. Thus, in his physical nature, he is correlated to the world of science, and in his spiritual nature to the divine intelligence, and hence it is that the doctrine of development, which belongs to the material side of things, can never account for all that man is. What is highest in him was not unfolded from the lower, and is not to be explained by being brought within the magic ring of "homogeneity, differentiation, and integration," but was superinduced upon the lower by the ceaseless creative energy of God. This at least is our reading of "the open secret of the universe"—not evolution by the force of changed physical conditions, but a law of progress operating on a higher plane and belonging to a more extensive scheme of things, the origin of which is the divine will. This universe is not a dead mechanism, a thing complete in and unto itself, and so long as it is thought that God has nothing more to do in it, and no business with it, so long as creation is the one eternal fact and not the creator, the era of stupid mechanical thinkers is not over.

This view of the origin and constitution of man is confirmed by other illustrations, showing that this does not stand alone, a solitary instance, but is in harmony with his entire religious condition and history. The Scripture doctrine of the moral regeneration of the soul is not based on any principle of development, is not the unfolding of capacities before latent, but is a moral creation. It is described as a change which does not take place either from within by an upward moral tendency in human nature, nor from without by education, but by the internal operation of the Spirit of God. It is not an evolution from a basis already lying in our nature, it is not an impulse from beneath, does not come about by any process of growth, but is the gift of God. Regeneration may not be miraculous—it probably is not—but it certainly is not a product of nature, in any proper sense in which the term nature can be taken.

Another illustration may be drawn from the resurrection of the body, which is progress on the material side of man's nature, as regeneration is progress on the spiritual side. The mode of the resurrection, if the term mode is applicable at all, may not be capable of explanation, but the doctrine of the resurrection is not a doctrine of development. The body will be *raised*, not grow from some germ which man carries in himself in this life. The present organism is

dissolved by death, and the spirit goes to God who gave it, but at the end of time the power of God shall come down on this sleeping dust, and it shall be changed, shall be raised a spiritual body; at the same time the spirit will re-enter it, as the soul of Jesus returned to his body, and as the soul was breathed into man at first, and all this will take place, not by the spirit's organizing a new body to itself by stages of growth, but in a moment, in the twinkling of an eye.

Still another illustration of the most undoubted character is the doctrine of the incarnation. This is indeed the central fact in the revealed system that "God was manifest in the flesh." The Logos assumed the nature of man, body and soul, into a union of life with himself. The divine entered the sphere of humanity to become a new centre of moral force, originating an entire course of development. But the incarnation, it does not need to say, was not a mere historical evolution of the race, the climax of a religious crisis, not a myth, but an historical reality manifested in the actual life and death of Jesus Christ. And thus the incarnation becomes forever the refutation of the hypothesis of evolution, in any and every form, as the all-sufficient account of the facts of human history, and remands that hypothesis to a lower place. What other event has so changed the face of the world? But how is it to be co-ordinated in any system of social science with other natural forces? The attempt to do so would be the denial of the fact.

These are a few illustrations of that great law of progress that not by development merely, but by the immediate power of God, man is moving up to a higher plane of existence and God is moving on to the consummation of his purpose of grace. Indeed, that larger constitution which religion reveals to us, and the entire doctrine of spiritual influences—the supernatural, in a word—presuppose just this science of man, that he does not stand in simply natural relations to the world around him, but was made from the first, as he still exists, for a higher end than the animal creation, and is destined for a more general interest in a future state than is possible for him in this world.

III. A careful study of human nature itself still further confirms our view that man is not a mere term in this self-evolving series. It is here that the weakness of Darwin, when he describes the development of the intellectual and moral faculties of man, becomes so palpably manifest. He thinks it can be clearly shown that there is no fundamental difference in the mental powers between man and the lower animals. Now, it is certainly possible that this may be so, but it has not yet been shown, nor do we believe that it ever will be

by the method of comparative physiology. There is more than a mere theological prejudice to be overcome, for men and animals have existed side by side from the beginning; and it is not simply since the books of Moses were written that men have thought themselves a generically distinct race. And this does not seem to us a mere conceit of the stronger, a prejudice of superiority, but the plain common-sense dictate of experience, almost in fact of direct perception. What we insist upon is, not that this hypothesis of an essential identity of intellectual constitution between man and the animal detracts from the dignity of the human soul, and is "derogatory to the instincts of a gentleman," but that it is offensive to common sense. The fallacy of concluding from certain general resemblances to a fundamental identity of nature becomes transparent by this consideration, that one of the terms of the comparison, the human, is immediately known to itself. We presume that mankind will always insist, in spite of the physiologists, that the qualities of the mind shall be determined by the study of the mind itself, and not by general analogies. We share the nature of the animals in a multitude of particulars, but we are also intimately sensible of a difference which is not one of degree, but of kind. This difference is expressed in general by the terms instinct and reason. It may not be easy to define the exact relation between them, but before attempting this the particular nature of each must be separately investigated. But even if the line which separates the two could not be definitely drawn, their essential identity could not on that account be fairly inferred. Who will draw the line between day and night? Night fades insensibly into day, but as day is not born of night, so intelligence is not reached by development of instincts. Let it be granted that the actions of animals are in many instances similar to the actions of men, that instinct seems sometimes to rise to the dignity of reflection and to put on the form of reason, yet it does not follow that they both proceed from the same principle. For what is instinct? It is an impulse in the nature to certain definite actions. The instincts of the animal are correlated to the various ends of its existence, and hence the action of instinct must resemble the action of intelligence, otherwise the constitution of the animal would be incomplete. But the principle of the action in each case is not to be determined by observation, but by reflection. The real question is this: Is there any light of intelligence, any movement of a rational will, between the impulse and the end? Man too has impulses to action, but between the impulse and the action is *himself*, a free, self-directed agency. It is also to be observed that the exact nature of

his agency is known to him, not by inferences from his conduct, but immediately in consciousness. Now, do the actions of the animal, as those of man, go out in the light and power of a rational consciousness, or do they go out blindly and without freedom of choice? This inquiry, we repeat, is not to be answered by comparative resemblances in respect to outward conduct.

We do not believe that any animal performs or is capable of intelligent action. Its actions are not founded on experience and reflection; its impulses are not of the nature of motives to the will; but its actions proceed from physical antecedents in the organism. Our reasons for this conviction are briefly these: *First*, Animal life is capable of explanation without the assumption of intelligence. Instinct is not mind, and its explication belongs properly to physiology. Stated, then, in terms of physics, instinct is the reflex action of the Sensori-motor Ganglia, produced by the stimulus of appetite and self-preservation. Instinctive actions are dependent directly on sensation, and the connection between the act and the physical antecedent is established not by reflection, but by simple association. Observation shows that the higher animals possess in general the powers of presentation and representation—that is, sensation, perception by the senses, and memory; their powers also act in consciousness, and hence they are not mere machines. But their actions are not initiated and guided by thought and will, and hence are not rational. Instinct is not mechanical, because it acts in consciousness; it is not intelligent, because it springs from the Sensorial not the Cerebral System. *Secondly*, The ascription of intelligence to animals brings with it difficulties that cannot easily be met. Instances of the ingenuity of animals in seizing their prey, of their skill in surmounting obstacles, of their adaptation of means to ends, have been multiplied as evidences of their capacity to reason; it is forgotten that the same animals, when taken out of the range of their accustomed associations, manifest only an astonishing stupidity. They act then with no sense at all. Their stock of endowments is soon exhausted, and their natures are incapable of free development beyond. But reason has no such natural limitations. "As the liver," says Schopenhauer, "will do nothing else than secrete gall for the sake of the digestion, and even exists merely for this end, so will the working bee do nothing else than collect honey, secrete wax, and build cells for the brood of the queen; the drones will do nothing else than fertilize; the queen nothing but lay eggs. All parts thus work merely for the support of the whole, which is the only absolute end; just as is the case in the parts of a bodily organism. This com-

mon result the insects *will* without knowing it, just as the organic nature works for final causes."

The humble-bee will prop up a piece of wax that threatens to fall with as much skill as if that were part of its regular work, but the same bee will exhaust itself in the attempt to force its way through a pane of glass in the window. Its nature is adapted to the ordinary conditions of its existence, and within this limit is more unerring than reason, but beyond it is blind and helpless. The comparison of men with animals has been made without discrimination, because no principle and no decisive test have been sought. If we are to conclude from outward appearances, how far shall we carry it? The honey bee will cover the exposed glass of the hive with wax before depositing its honey. Must we say, then, that it knows the effect of light upon honey? Is it a practical chemist? Is its knowledge even professional? A mode of interpretation which applies only to particular instances and cannot be carried through is worse than good for nothing from the first: it is misleading. Animal instincts are adequate to all their wants; with change of circumstance new instincts even may be taken on; but instinct never seems to lose its distinctive character. It may also be educated by man. The horse may be taught many things by his master; his instincts may be improved, but they cannot be improved to such an extent that the horse at length assumes power over himself, and casting off the authority of man, stands forth on his own responsibility and exercises a personal agency. The fuller his development, the completer his subjection to man. He will never transcend his own experience. The training of an animal for any purpose is accomplished by establishing a fixed association between certain actions and certain physical accompaniments, and no one is fit to be entrusted with the care of animals who expects them to draw inferences from their own experience. All their acquired knowledge is habit, and nothing more. The impressions which they receive through the senses are associated immediately with individual objects, and they do not abstract, judge, or infer. If they could perform these acts of reason, is it conceivable that they should stop where all animals do stop? Compare the highest organized of the brute creation with the lowest organized man, and the brute will surpass the human in all that is common to them both: it will surpass him just because he is human; but the mental condition of the one cannot conceivably pass into that of the other. As sensitiveness in the plant never becomes sentiency, as sensation in man never becomes knowing, so instinct never develops into mind. "But," it will be insisted, "there is a regular gra-

dation of life throughout nature, and between any two terms whatever the connecting link or links may be found." Certainly; we know that man is an animal and holds important physical relations to all other animals, but is it not seen to be unsound reasoning to argue from resemblances that address the senses only, to inward likenesses and unlikenesses which can be known only in consciousness?

But if reason cannot be derived from instinct, so neither can the moral sense. That a distinction in this respect, both broad and clearly defined, does exist between man and the brutes, is a fact beyond dispute. Darwin indeed declares that "any animal whatever, endowed with well-marked social instincts, would inevitably acquire a moral sense, or conscience, as soon as its intellectual qualities had become as well developed, or nearly as well developed, as in man." But in this statement the whole question is assumed. It is assumed that the mental faculties in man have been developed, that the moral idea is acquired and not natural to man as man, and that a moral nature is something which must be superinduced upon the rational. He then goes on to say that as soon as the mental powers had become highly developed and memory had begun to bring past actions before the mind, a feeling of dissatisfaction would arise whenever it was seen that an enduring instinct had been sacrificed to a transient one. Consequently, there would be a resolve to act differently in the future. And this is conscience. He is careful, however, to premise that he "does not wish to maintain that any strictly social animal, if its intellectual faculties were to become as active and as highly developed as in man, would acquire exactly the same moral sense as ours." Now, when one knows what man is and what mental powers belong to him, and then imagines an animal in the process of acquiring the nature of man, it would seem an easy task to explain how the human ideas and sentiments must appear also in that animal, but even easier would it seem if the explanation was to be applied, not to the real ideas and sentiments as they exist in man, but to others which may be said to resemble them. An unsatisfied social instinct is about as near akin to the moral idea as "the spirit of the beast" is to "the spirit of man." The metaphysical world is somewhat familiar with that method of reasoning. Given, the problem to find the origin of all our ideas by tracing them to experience, it is only necessary to take ideas, as near counterparts of the real ones as possible, that can be so accounted for, and then to declare that these represent all that is contained, or, at any rate, all that is valid, in the originals.

But we have no space to follow out this line of remark. We will simply refer in closing to one obvious consequence of the theory that there is no essential difference between the intellectual capacities of men and those of the higher animals, viz.: that it opens before us a new field for the exercise of philanthropy, if that is the word. If these dependent creatures are truly capable of taking on rational and moral qualities, it is the solemn duty of man to reach down to them the helping hand. To deliver them from the vanity of their present existence and elevate them to the dignity of an intelligent and moral life, even in the humblest measure, thus connecting them with the great rational universe and bringing them under the government of the moral Judge of all, would seem the noblest work that could engage the sympathies and benevolence of mankind. Why it has not been seriously undertaken, why schools have not been established for promoting the humanization of the brutes, would perhaps be queried the moment one passed out from the glamour of a great philosophical tendency into practical acquaintanceship with animal life. The Scripture representation cannot probably be improved, that God made man in his own likeness, and therefore gave him dominion over all the earth; he hath put all things under him, all sheep and oxen, yea, and the beasts of the field, the fowl of the air and the fish of the sea, and whatsoever passeth through the paths of the sea. When we sit down to a joint of mutton or a roast of beef, we need not also sit down to the scruple that we are about to feast on incipient humanity.

Some great crisis in human thought seems nigh at hand. We may have only tendencies at present, but these are all-embracing. The antagonism between the method of "positive" science and the method of theology and metaphysics—and, we may add, of psychology—is irrepressible. This one-sided study of nature is and always has been materialistic. To its eye the whole universe is but the realm of matter and force, beautiful it may be in the relation of its parts and its orderly movement to mere intellectual contemplation, but cold and dead to the spirit—as unlike the living world as Babbage's calculating machine is unlike the intellect of a Newton. Now, the inverse order of thought, which makes matter the basis of its investigations, conducts of necessity to conclusions as derogatory to man himself as to nature's Author. "It has ever been the misfortune of the mere materialist," observes Cudworth, "in his mania for matter on the one hand and dread of ideas on the other, to invert nature's order, and thus hang the world's picture as a man with his heels upward." There is no doubt truth in the observation that what

philosophy a man chooses depends on what kind of a man he is. If his spirit is irradiated with divine light, if he rejoices in the love of God, he will never lose himself in his system. Says Fichte: "There are two grades of mankind, and in the progress of our race, before the last grade has been universally attained, two chief kinds of men. The one kind is composed of those who have not yet elevated themselves to the full feeling of their freedom and absolute independence, who are merely conscious of themselves in the representation of outward things. These men have only a desultory consciousness linked together with the outward objects, and put together out of their manifoldness. They receive a picture of themselves only from the things, as from a mirror; whatever they are they have become through the outer world. Whosoever is only a production of things will never view himself in any other manner, and he is perfectly correct so long as he speaks merely for himself and for those like him."

Now, if we were driven to naturalism by a logical necessity of thought, if that were the last word of reason, we should of course have to submit. We should silence the beating of our hearts, though the heart is also a fact and must in some way be taken into the account; we should close our eyes and lie down, when we had to do so, under the crushing wheels of this great blind Juggernaut. But when the fact is that this modern naturalism, so far as it professes to be a philosophy, is just one vast system of paralogisms and assumptions, we firmly decline the immolation, and make our appeal to more comprehensive laws of intelligence and a higher constitution of things. Mere physical science, which begins and ends with nature, which seeks only mechanical causes, never can construct a philosophy of all being and knowing. It cannot, indeed, give the whole of anything that exists. Whatever it can take up into its view is dependent, and has its ultimate reality in something else. In its own field it is sufficient unto itself and may reign there undisturbed, but for the interpretation of nature as a whole, it cannot displace, as it could not take the place of, the principles of metaphysical philosophy and the doctrines of revealed truth.

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