

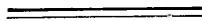
# DESIGN

AND

# NATURAL SELECTION.

BY

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LONDON :

WATTS & Co., 17, JOHNSON'S COURT, E.C.

*Price One Penny.*

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# DESIGN AND NATURAL

## SELECTION.

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IN a very early stage of his intellectual advancement the idea must have occurred to man that, if God was the author of everything in the universe, every creature, from the monad up to man, and every faculty they possessed, must have been designed by the omnipotent and all-wise ruler of the universe for some special and wise purpose. It would be difficult to determine the exact age of this argument, or who among the ancient philosophers put it forth with the greatest clearness and force. Certain it is, however, that it may be found among the writings of Plato and other Greek philosophers, and that it has been presented through many centuries under various guises.

Since the conflict between reasoners who have argued for a Materialistic basis for all phenomena and those who have taken the Spiritualistic, or Dualistic, view, the Design argument has had a prominent place in all important disputations on the existence of Deity. No one, I think, will deny that, so far as this argument is concerned, its great popularity in Europe has been due to the excellent way in which it has been supported by the memorable illustrations of Dr. Paley, from which it was sought to demonstrate an exact analogy between the watch and its maker and the universe and its supposed author. Even according to the early belief of Darwin himself, there was nothing inconsistent in the ideas of Natural Selection and Design. God might have designed the universe, the naturalist affirmed, and have imparted to it the potentialities from which all

forms of life have since sprung. In that case, Natural Selection would be but the working-out of God's plan or design. A little thought, however, will be sufficient to convince us that, in this, the great naturalist has misunderstood the argument as it is presented by the theologian ; for, according to all Theistic reasoners, up to within the last few years, when they have been compelled to accept the doctrine of Evolution or be considered unworthy of the consideration of scientific or thoughtful men, God designed things just as we find them to-day—civilised man, with good eyes and perfect frame ; that he did not design an animal or a variety of animals, and allow a number of other animals to be developed from them that are now considered distinct species, but that he created the variety of existing creatures just as we find them to-day in the various countries of the world.

Before we consider the value of the Design argument, it is worthy of notice that, coming as it does distinctly under the head of arguments of the mode *à posteriori*, it must be acknowledged to be a purely scientific argument. In answer to the question, "To what class of inductive arguments does this one—from marks of design in nature—belong?" Mr. Mill answers : "The species of inductive arguments are four in number, corresponding to the four inductive methods—the methods of agreement, of difference, of residues, and of concomitant variations. The argument under consideration falls within the first of these divisions, the method of agreement. This is, for reasons known to inductive logicians, the weakest of the four ; but the particular argument is a strong one of its kind." Now, my own opinion is that Mr. Mill attached to the Design argument greater value than it really deserved. The point upon which he laid much stress was the improbability of the principle of the survival of the fittest "being sufficient to account for the degree of perfection found in some of the organs of man—such, for instance, as the eye ;" but even

this hypothesis he did not think so absurd as many suppose. It would, he says, "require us, for example, to suppose that the primæval animal, of whatever nature it may have been, could not see, and had, at most, such slight preparation for seeing as might be constituted by some chemical action of light upon its cellular structure. One of the accidental variations which are liable to take place in all organic beings would, at some time or other, produce a variety that could see in some imperfect manner; and, this peculiarity being transmitted by inheritance while other variations continued to take place in other directions, a number of races would be produced who, by the power of even imperfect sight, would have a great advantage over all other creatures which could not see, and would, in time, extirpate them from all places, except, perhaps, a few very peculiar situations underground. Fresh variations supervening would give rise to races with better and better seeing powers, until we might, at last, reach as extraordinary a combination of structures and functions as is seen in the eye of man and of the more important animals. Of this theory, when pushed to this extreme point, all that can now be said is that it is not so absurd as it looks, and that the analogies which have been discovered in experience favourable to its possibility far exceed what any one could have supposed beforehand. Whether it will ever be possible to say more than this is, at present, uncertain." Upon this very point modern evolutionists—especially Haeckel—have been very definite that there is an overwhelming amount of evidence to demonstrate that functions precede organs, and that some animals now exist that see without organs, or that they are conscious of the presence of light or of some distinct object.

Our concern now is the value of the Design argument in itself. What is it? It is affirmed, in the first instance, that Nature manifests marks of design as a whole, or in objects taken by themselves; that it is inconceivable that these manifestations could have been brought about by any

number of haphazard occurrences, or by occurrences that have happened by virtue of the inherent properties of bodies—indeed, that these manifestations carry with them the evidence of having been produced by some intelligent agent behind phenomena, which Theists unanimously proclaim is God. An illustration is given. For instance, it is said: “Here is a watch: obviously that watch did not make itself. Mechanism of so complicated and delicate a nature could not possibly have so arranged itself without the aid of an intelligent person behind it. If that is admitted, then it is acknowledged that watches are made, that they are constructed by intelligent persons. If a watch, it is then argued, requires an intelligent person to make it, how much more does the universe, infinitely more complicated and admirable in its working, require an intelligent creator to produce it?” Or, to take another familiar illustration: “Look at the human eye. See what a delicate and beautiful organ it is—how admirably adapted for the purpose of seeing. Could it possibly occur that, in a universe such as this, an organ so perfect in all its parts could come to be possessed by man and the lower animals by any process short of design.” The human hand is sometimes adduced as another effective piece of evidence of the existence of a designing mind in the universe.

Now, man cannot possibly transcend his own experience; and all his judgments are necessarily based upon it. And it will be observed that this argument from marks of design is one purely drawn from experience. A man sees a watch made, or sees a man whose business it is to make watches; he, therefore, concludes that all watches are made. If, however, instead of being made by hand, they were fashioned by machinery, the materials only being required to be placed in a cavity of a machine, he would still know that watches were made, and that the machinery was constructed by the ingenious mind of some man. It is merely, so far, a matter of experience, and not a question of complicated structure at

all. If a man saw a wooden watch that contained no wheels, no mainspring, and that was of no practical use, he would still conclude that it was made. He would know the man who made it, or at worst know the man who knew the man who made it. On the other hand, a savage, seeing a watch for the first time, would be very unlikely to think that it had been made. Why? Because he has no experience of watchmakers. A little child, on being asked where she thought wool grew, triumphantly replied: "I know; in old men's ears." She had seen wool in her grandfather's ears, and she naturally thought that was the bed in which it grew. Such was her experience: she could not transcend it.

But, if a watch is made, the maker is not also the manufacturer of the materials out of which he manipulates it. Those are already at hand; his design, or contrivance, consists merely in skilfully arranging certain parts to produce a certain result. In this case, therefore, there is no analogy between the maker of a watch and the maker of a universe. According to all Theists, God is also the maker of the materials from which he produces so many designs. Now, while man has some experience of watchmakers, he has absolutely none of universe-makers, and therefore he cannot say that the universe was made. Besides, there is in reality no resemblance whatever between the natural processes of nature and the artistic works of man. Nobody ever saw anybody who made a tree, and there is absolutely no analogy between a manufactured article and the natural processes of nature, such as the growth of a tree from a seed, or a human being from a germ. Unless we knew the Deity and understood his capabilities, it would be merely assumption on our part to affirm that he was the maker of trees, or indeed that he was the maker of anything. We do not judge that an article has been made unless we have some experience of the manufacture of such or similar things.

The second illustration is rather an unfortunate one to

put forward as affording evidence of design in nature. Nothing is more common than to see persons or animals with defective eyesight, and any imperfection in vision resulting from an inherent quality of the organ is an evidence either of bad design or of an absence of design altogether. To allege that an imperfect organ can be the work of an all-wise and all-powerful Deity supposes that a perfect being can produce a failure. Nor could a perfect organ, designed by an Almighty God, get out of order, for it is a positive evidence of imperfect workmanship that an organ or instrument becomes impaired or rendered valueless by use. Thousands of persons born into the world are born with eyes out of which they cannot see. As Tom Hood, in one of his satirical poems, says of "Tim Turpin," who was gravel blind :

" And ne'er had seen the skies ;  
For Nature, when his head was made,  
Forgot to dot his eyes."

But in this case the deficiency would be chargeable against Deity ; for Nature, being neither intelligent nor good, cannot be considered as answerable for her imperfect productions. There are thousands of persons born blind, and hundreds of thousands whose sight is so defective that they keep the doctors of our Ophthalmic Hospitals in constant employment. As an optical instrument the eye is very imperfect. To enable him to see small objects, or objects at a great distance, man has to call in the aid of the optician, who can manufacture microscopes by which very minute particles of matter may be seen, or telescopes by which heavenly bodies altogether out of view to the naked eye are brought within the range of human vision. "Optically," says Professor H. D. Garrison, of America, "the eye is not perfectly planned to guard against spherical and chromatic aberrations, while in mechanical construction it is inferior to the cheapest optical instrument in the market. Astigmatism, or want of sphericity of the cornea, is present in a greater or



less degree in the case of every human eye, while the crystalline lens are not truly centred, as Helmholtz has shown, on the optical axis of the eye. The refracting media of the eye, as the aqueous humour, the crystalline lens, the vitreous humour, are not uniformly transparent, and hence rays of light during transmission undergo absorption and refraction, giving rise to various shadows, halos, and fringes, which fall upon the retina to the great impairment of vision. Even in the best of eyes there are numerous opaque granules, or floating patches, in the humours, giving rise to moving spots or spectres, so well observed, and yet so annoying, while using the microscope, especially if the field is well illuminated. Long-sightedness and short-sightedness are common difficulties, arising from want of proper relation between the refracting power of the eye and its depth, or the antero-posterior diameter. All these difficulties are practically overcome or avoided in even the cheapest photographic cameras in the market, and yet no one has ever claimed that the camera had a miraculous origin, or that the wonderful design manifest in its mechanism proves its designer to have been a God."

Every organ that man possesses is in some respect imperfect—indeed, absolute perfection is altogether inconceivable, there being degrees of perfection only, by reason of comparison with other objects. Thus, as organs, one pair of eyes may be more perfect than another, though each may be defective; and so on.

When, instead of individual objects being taken separately, we take the working of nature as a whole, we find that all animated matter is in constant warfare—the insect against the vegetable, and birds against the insects, the lower animals against birds, and man against them all. And so terrible is this struggle that, if the Design argument were really true, many of the designs are of so destructive and horrible a character as to reflect anything but credit upon the wisdom or goodness of the Deity who is the alleged

author. Thus the claws and teeth of some carnivorous animals are so arranged as to be just suited for the purpose of laying hold of and tearing the flesh of their prey. In fact, in nature the strong oppress the weak, the brutal ride rough shod over the gentle, the lion tears the peaceful deer or the inoffensive lamb; idleness and hypocrisy revel in luxury, while modest honesty walks about in rags. And how oft indeed the earth has been deluged in blood through the wickedness of the superstitious or the caprice of the powerful. With truth crushed to earth, virtue outraged, misery and suffering perpetually abounding in the various nations of the earth, is it not folly to talk of the beautiful designs of omnipotence?

Man, assuming in his vanity that everything was made especially for him, has arrogantly declared that everything in the universe was arranged so as to subserve to his benefit. Curé Meslier, in his "Bon Sens," relates an Eastern story, which fittingly describes this arrogance. A priest on a pilgrimage wanders through some gardens; he is surrounded by trees, whose foliage enchants the eye, and the perfume of whose leaves is delicious. Some of the trees contain luscious fruit, of which he partakes, and, as he does so, he shouts up in his ecstasy: "Allah, Allah, how good thou art to the children of men! Thou hast made these trees to charm our sight, and the fruit to minister to our wants; how good thou art to the children of men!" Proceeding on his journey, he goes through still more beautiful gardens. He hears the birds singing in the trees; while the sun, in all his glory and refulgence, shines upon the face of the earth, and everything seems to breathe an air of joy and peace, and, in his ecstasy, the priest again exclaims: "Allah, how good thou art to the children of men!" The sun had sunk below the horizon when the priest, still on his journey, proceeded to climb an exceedingly high mountain, on the summit of which, at nightfall, he lay himself down to rest. When in the morning he arose from his sleep he looked on the other

side of the mountain, and, lo, he saw the corpses of men who had been slain in battle strewn about the earth, and wolves devoured the carcasses, and, as they did so, they seemed to exclaim, in their ecstasy : " Allah, Allah, how good thou art to the children of wolves ! Thou hast made these men fight in order that we might have the ineffable bliss of devouring their bodies ; how good thou art to the children of wolves ! " And it is this arrogant feeling that the earth and the fruits thereof were made specially for him that has caused man to imagine a God designing and arranging everything with a view of making him happy and contented.

That we may understand the meaning of Natural Selection, it is well that the facts upon which the theory rests should be briefly stated. And, first, it is assumed that the proposition, that all animated matter has the power to increase beyond the means of subsistence, is one of irrefragable truth ; and that, were it not for the constant operation of checks, the number of beings that would be produced under favourable conditions would outstrip Nature's capability to provide enough food to enable all to live. It has been calculated by Linnæus that a plant which produced only two seeds annually, and whose seedings also produced two, would, in the course of twenty years, produce no fewer than one million of plants. Nature kills off the young of animals, and destroys thousands of eggs and seeds. To every seed that comes to maturity a thousand perish ; to every animal that survives and lives a good age, hundreds die young or are destroyed at birth. And nature kills man in precisely the same way. When too many are born a famine kills thousands, and disease kills more. Among the millions of plants and animals that exist there are no two alike. Either from inherited qualities, or other similar causes, there are found to be some variations from other existing beings in every creature born into the world. However slight these variations, they constitute an advantage or a disadvantage to the individuals possessing them. These

variations take place under two well-ascertained conditions : under nature, according to geographical position and the constantly-changing conditions of life ; under domestication as the effects of habit, and in regard to plants and the lower animals, the result of artificial selection, or selection by man on account of possessing some superior qualities which were thought worthy of preservation. From the fact of there always being more beings in existence, as compared with the amount of food at their command, a struggle for existence is set up in which the "fittest," or those best adapted to their surroundings, get the advantage, while the weak, and those in other ways unfit for the uneven battle, have inevitably to succumb, the struggle being keenest among the individuals and varieties of the same species.

Now, it must not be supposed that Natural Selection is the cause of organic changes in the structure either of animals or plants ; but only that, by the means of so-called Natural Selection, the variations that occur and are beneficial to the individual are preserved. Nor must it be understood that the term Natural Selection implies that nature is conscious of selecting or choosing one being or set of beings in preference to another. It merely means that the totality of natural phenomena produces certain results, and that the term Natural Selection is the most convenient with which to describe one factor by which these results are brought about. First as to climate. Nobody will dispute the fact that the climate of various countries has undergone many changes within the past few centuries ; nor that with the change of climate the people inhabiting these parts undergo a no less distinct change. With changed conditions many beings would necessarily succumb. A severely cold climate would quickly kill off thousands of human beings before the majority had so adjusted themselves to their changed conditions as to enable them to live without extraordinary effort. Man having been diffused more widely over the face of the earth than any animal, as a consequence becomes subject

to greater variability, and, having developed to a large extent his intellectual faculties, aided by his social instinct and power of speech, was enabled to make much greater progress than any other organised being. But, taking a barbaric creature and tracing his advancement on the road to civilisation through its various stages, it will be found that it has taken place solely through the incessant action of the law of nature by which the fittest alone are enabled to survive, while the unfit are eliminated. Suppose there are a thousand persons living in a country who have been only fairly equipped for life's battle, and suppose that there should, from among them, arise a dozen or so in a slight degree an improvement upon them, the chances of life for the latter would be much greater than for the former, and they would rapidly increase in numbers; so that, in a short time, from the dozen, there would be hundreds above the common level to augment to the severity of the struggle. Among these the best—that is, those most fitted—would come to the front, and, by a constant repetition of this process, it is easy to recognise the manner in which the character of a people might be changed.

To understand aright man's progress, as compared with other beings, the importance of the advantage of his bodily struggle must not be under-estimated. Man has not always gone erect, but used his hands in locomotion and in climbing trees; and there can be no question that the first set of beings that went erect had an immense advantage over all others. Then the structure of his hands, when he had learned to walk erect, would be very advantageous in helping him to perform work for which other animals were, by their very formation, entirely unfitted to undertake. The free use of the arms and legs of man would assuredly be conducive to other modifications; and when man had learned to make articulate sounds, he could then easily out-distance all other organised beings.

All this, however, would take an immense period of time

to accomplish, and would result only from the slow and everlasting process of Natural Selection. Sexual selection, or the selection by the fittest males of the fittest females, would add considerably to the advancement of man; and under social influences even greater advantages would follow. While man would thus improve himself by contact with his fellows, he would also improve many of the lower animals by domesticating them, and many plants by artificially selecting and preserving those that best suited his tastes or possessed some real utility. How, it will be asked, does this evidence of the gradual development of man effect the argument drawn from design? In this way. Take the eye. The Darwinian hypothesis pre-supposes a time when what is now called an eye was a most imperfect organ in all animals; that only those animals that used these organs developed them to any extraordinary extent; and that to-day the eye in man seems to have reached its highest point of development, and refuses to do all the work which the brain requires it to perform. It may safely be affirmed that, in regard to organised beings, functions precede organs, for it has been discovered that there are some animals in existence that have no organ of vision, and yet, in a sense, it may be said that they perceive, though indistinctly, objects about them. For example, the jelly fish sees, though it has no eyes. Other animals—such, for instance, as the mole, and some species of rat—have eyes, but, passing their lives entirely in subterranean passages, have lost the power of vision.

Now, if the best eyes are only the result of development, how can it be said that eyes were originally designed by an omnipotent, all-wise, and all-good Deity? On the other hand, if it be said that God designed the world and man, and let Nature do the rest, it is only saying, in other words, that Deity, in his infinite wisdom, designed imperfect eyes and allowed them to become more perfect by a slow and painful process—that is, that God is good, but not all-good;

that he is wise, but not all-wise ; and that, being all-powerful, he did not exert either his wisdom or goodness in the creation of the universe. Rudimentary organs would be extremely difficult to understand on the principle of design. In the human ear there are several muscles in a rudimentary condition which are absolutely useless. For what purpose was the mammæ of all male quadrupeds designed? It is in a rudimentary condition, and serves no useful purpose. Or of what use are the incisor teeth of ruminants, that never cut through the gums? There are in man, also, various muscles which are of no utility to him, but which are highly developed in some of the lower animals. A horse or cow, for instance, twitch their skin when annoyed by flies ; and, though man possesses remnants of the muscle by which this movement is effected (the panniculus carnosus), it is, for the most part, useless to him. Some men, it is true, can contract the muscles of their scalps, move their ears, or perform other extraordinary movements ; but, in the large majority of human beings, these muscles are in an altogether rudimentary condition.

The Design argument, therefore, is an ingenious attempt to make use of certain facts of nature—such as the adaptation of certain organs to perform certain functions—with a view of proving that they were designed for such a purpose ; while the whole of human experience goes to show that only those whose organs were so adapted could possibly have survived, and that those whose organs were ill adapted for the purposes of life's struggle were pressed out in the general scramble for existence. To reason accurately, the theologian should begin at the other end. He should take man in his primitive condition, and try and demonstrate admirable design in a god-man savage ! Or, tracing the horse back to the bear, as Professor Huxley has done, he should endeavour to show the infinite wisdom of the arrangement by which a wild beast was transformed, by a slow and painful though a purely natural process, into a

tame, handsome, and useful animal. No; in the face of the facts of evolution the Design argument is no longer tenable. It has been slain alike by science and common sense, and in a few years will be consigned to that oblivion in which older and more pernicious errors have found a well-deserved and final resting-place.



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