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ARTICLE VII.

IS ADAPTATION POSSIBLE WITHOUT DESIGN?

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THE contest with agnosticism, and all types of unbelief which deny a personal Creator, must be fought on the line of final cause. Hence the persistent effort of naturalists to get rid of design in the formation of the universe. For if there be clear and irrefragable evidences of finality in the construction of the cosmos, then it will be impossible to get rid of the inference that a personal agency has directed the work. For there cannot be design without intelligence and will, and these are forces which are not possessed by matter; and cannot be conceived as acting except as the attributes of personality.

In all the theories of naturalism it is assumed that matter is eternal. Indeed, all systems of speculation which are not influenced by direct revelation take this doctrine for granted. For the intellect left to its own resources cannot conceive the act of absolute creation, and unless it be assisted by superior intelligence can never rise to that idea. All systems of cosmogony which are the offspring of unassisted human speculation, be they Egyptian, Hindoo, or Greek, hold the universe to be a growth from primordial elements which had existed eternally. The Greek cosmogony, which is the highest type of all these, was simply a development. In this philosophy, *φύσις* was only "a growth," from *φύω* "to grow" or "develop"; and consisted in the orderly arrangement of matter according to the plan of a superintending power which directed its movements by design, and in obedience to fixed laws. Matter had nothing to do in its own arrangement, but was

plastic in the hands of a fashioner, who disposed each part in conformity to his own pattern or idea; and left unmistakable evidences of this design in its construction.

The development theory, for which Darwin gets so much fame, underlies the entire Greek philosophy of nature. Neither he nor any modern who has proceeded on the same lines, has a just title to originality. They simply adopted what they found ready-made to their hands; and, clothing it in modern phraseology, claimed originality, and permitted the world to ascribe to them the credit of a new interpretation of nature. But there is a wide difference between the way Greek speculation handled the development theory and that of modern naturalism. Matter was eternal with the leading Greek physicists, it is true; but its development was confessedly according to design. For there was nothing formed by chance, or without the superintendence of a superior Power, working according to laws invariable, except in so far as this Power chose to suspend or vary them to carry out his own aims. God was above nature; not subject to the law of development, but directing it for wise and beneficent purposes. Hence design is used by the prince of thinkers to prove the existence and superintending providence of God against pretentious atheism. In the first formal treatment, as found in the *Memorabilia* of Xenophon,¹ there are the germs of that proof which has been expanded and applied by subsequent thinkers with greater exactness, but never with more cogency and clearness. The universe is held to contain the testimony, in its own construction, to prove a Creator possessed of infinite intelligence, power, and goodness. Moreover, this evidence is so clear that it leaves those who deny it inexcusable for their unbelief, and condemned by the voice of Nature herself for their ingratitude. But the modern naturalist will get rid of "design" at all hazards, because he has the determination to eliminate a creative agency from the cosmos. While there is design confessedly

¹ Mem. i. 4.

in all inferior works, nay, while it would be impossible to effect anything in every-day life, in science or philosophy, without some plan clearly conceived and strictly followed, yet, in the infinite work of creating and controlling an illimitable universe, there is no Intelligence. Chance presided at its birth; chance devised all its laws, and directs its energies; chance provides for its continuance, and conserves its forces so that its energies shall never become exhausted. And yet those who talk so glibly of chance as an omnipotent factor, boldly assuming that it is sufficient to account for the creation and maintenance of all things, leave out of view the utter improbability of its action according to their own doctrine. What is the mathematical probability that chance could originate the universe? It has been subjected to a rigorous calculation by Laplace, who surely was competent as a mathematician, and cannot be charged with an undue leaning toward revelation. He says:¹ "Des phenomenes aussi extraordinaires ne sont point dus à des causes irrégulieres. En soummittant au calcul leur probabilité, on trouve qu'il y a plus de deux cent mille milliards à parier contre un [two hundred thousand billion against one!] qu'ils ne sont point l'effet du hazard."²

Even chance must have a beginning. There can be no play of hazard without dice to shuffle. Let it be granted that this principle presided at the origin of the cosmos. It could not arise from nothing, for the agnostic, even, assumes that there was star dust or gas for a basis. Let it be granted again, for the sake of argument, that matter is eternal, or that it came into existence we know not how: it now exists. Grant, even, that, at an earlier stage, it was star dust, or the most attenuated gas. If it existed independent of all regular forms except as separate atoms, then these would remain in their original shape, whatever that might be, whether uniform or various. If they contained appetencies through which they would as-

¹ *Système du Monde*, ii. 303.

² *Vide*, also, St. Hillaire, *Metaphysique d'Aristote*, Preface, pp. 208, 209.

sume by accretion or growth some definite and regular forms, this must be by a power different from a mere conglomeration. For this could fashion no regular bodies: nay, only one; and the gas or star dust would simply come together into some kind of a mass which would remain united forever, unless there were other influences at work. Hence the appetency must involve something more, in order to insure organic growth. Here the unfairness of the naturalist creeps in, while he quietly assumes that this tendency of one particle of matter to another will produce different forms and develop growth. Lucretius,¹ e. g., first denies that there was intelligence employed in arranging the atoms, and immediately afterwards introduces the action of that very principle which he had excluded. The agnostic, by a perfectly baseless assumption, postulates that the particles of matter were endued with motion in a certain direction, and impinging on each other they fastened into regular shapes. This involves both cause to give motion rather than rest, and that in a definite direction rather than at random. These assumptions are wholly gratuitous, even as the eternal existence of matter as a basis for chance to act. But let it be granted that the molecules of matter existed from eternity. How did they come together on the theory of chance? That advanced thinker, W. K. Clifford, shall enlighten us:—

“. . . the view of the constitution of matter which is held by scientific men in the present day is not a guess at all.

“In the first place I will endeavor to explain what are the

¹ *De Rerum Natura*, i. 1020–1022, 1027–1030.

“*Nam certe neque consilio primordia rerum
Ordine se suo quæque sagaci mente locarunt;
Et, quos quæque darent motus, pepigere profecto:*

*Tandem deveniunt in taleis disposituras
Qualibus hæc rerum consistit summa creata:
Et, multos etiam magnos servata per annos,
Ut semel in motus coniecta est convenientis,
Ecfcit.”*

main points in this theory. First of all we must take the simplest form of matter, which turns out to be a gas—such, for example, as the air in this room. . . . All the particles are as near as possible alike. . . . These small molecules are not at rest, but are flying about in all directions with a mean velocity of seventeen miles a minute. They do not fly far in one direction; but any particular molecule, after going over an incredibly short distance, . . . meets another, not exactly plump, but a little on one side so that they behave to one another somewhat in the same way as two people do who are dancing Sir Roger de Coverley; they join hands, swing round, and then fly away in different directions.”¹ We would like to ask the molecules what put it into their little heads to choose their partners after this style, rather than the Spanish Jota, or the Fisher’s Hornpipe. We infer that they were merely trying their paces; for they separated, and creation did not begin yet. But, in the long night of eternity, when the list of experimental dances was finished, chance came to the rescue. “We may suppose,” says this High Priest of the holy molecular dance worship, “for illustration, that two molecules approach one another, and that the speed at which one is going relatively to the other is very small, and then that they so direct one another that they get caught together, and go on circling, making only one molecule. . . . Then they would meet together and form a great number of small hot bodies. . . . Here then we have a doctrine about the beginning of things.”²

Behold “the bright consummate flower” of agnosticism! Rev. Mr. Jasper, of the colored church at Richmond, having the courage of Don Quixote, charges the Copernican theory and declares: “The sun do move!” He and Clifford are alike in that both have the unshaken confidence of ignorance.

¹ “The First and the Last Catastrophe,” in *Lectures and Essays* (London, 2d ed., 1886), pp. 135, 136.

² *Ibid.*, pp. 146, 156.

But the colored scientist has this advantage at least: he knows what he wishes to say, and we can understand him!

But, to return to our subject. If the particles of matter not only existed eternally and possessed motion, why should this be in one direction rather than another, and in regular modes rather than at random? Mere appetency was not found to be enough, except it be directed to some specific end. And if it be directed in some definite course at one time, all motion and growth would be uniform, and could produce no variety. Hence, there must be varieties of motion, differences of appetency, at different times. Gradually, and as he thinks, imperceptibly, the naturalist, from Lucretius to Hæckel, has introduced by perfectly unwarranted assumptions one factor after another, until he has developed design, power, or causation, all looking toward a specific result; or else absurdly enough achieving it without having such a thing in view. But it is contrary to reason that this last could take place—a result involving all the elements of design, and yet there was none employed. We do not see any work produced among men without there being a rational method thought out in advance and executed by intelligent action. Imagine a workman striking in the dark among the various ingredients necessary to make a watch or a steam engine. Let him strike through all eternity, and the longer he struck the less likelihood is there that the materials would be hammered into a complicated instrument. Would the perfected work ever appear? No one can argue in this way without illustrating the scriptural declaration: “Professing themselves wise, they became fools.”

But why, we may ask, should matter be endued with appetency rather than indifference or repulsion? The form in which naturalists delight to picture it originally is in the greatest possible degree of attenuation. Yet we know that matter in a gaseous form shows a decided renitency against being brought together. The more attenuated, the more do the

particles repel each other. Thus the assumption of appetency as the prime factor in development is both gratuitous, as has been shown, and contrary to the established order of nature as we see it in highly rarified gases. When did this marvelous change, this "catastrophe," as Clifford delights to call it, take place in the process of nature? Repulsion must be overcome by power, and that too not by mere force working at random but in a particular way. Not so as to drive the particles of star dust or gas farther apart, nor away into infinite space, but together. ". . . if we were to trace back the history of all bodies of the universe, we should continually see them separating up into smaller parts. What they have actually done is to fall together and get solid. If we could reverse the process we should see them separating and getting fluid: and, as a limit to that, at an indefinite distance in past time, we should find that all these bodies would be reduced into molecules, and all these would be flying away from each other. There would be no limit to this process, and we could trace it as far back as we liked."¹ So the appetency must not only act contrary to the way we see matter acting, in its most attenuated form, but in a specific way, directly the opposite—this way rather than any of the innumerable courses it might have taken. Perhaps matter got tired of acting in one way. Perhaps it expanded in space until weary of spreading itself, and so concluded to make a new departure. But it cannot pass through this particular catastrophe without both will and power to effect its purpose. And thus, while appetency involves a change from the tendency we see in gaseous bodies, let it be granted that this power is at work simultaneously with expansion. Let matter be endued with attraction so that one particle tends towards another, then this must be by a force greater or less than, or equal to, the repulsion. If greater, then repulsion will be overcome, and all matter in the universe come together in a mass. If equal,

¹ "The First and the Last Catastrophe," p. 155.

then all matter would remain in its original condition: neither brought nearer together nor expanded further apart. If less, then repulsion must go on forever. Hence there must be the nicest adjustment conceivable of the forces operating on matter. There must be just enough of each before any bodies can be formed out of the star dust of which we hear. When so many as three bodies have been fashioned by the forces acting at random, then their mutual action on each other introduces conditions so intricate that the "problem of the three forces" cannot be solved by the utmost resources of the calculus as yet understood. And when there is an addition of one more force to the interaction, the problem is made immensely more difficult. What will be its intricacy when the unnumbered and innumerable bodies which deck the firmament, visible and invisible, come into the fellowship of its cosmos? This perfect adjustment of forces to work out a most intricate problem extending its ramifications through all time and space, must be purely accidental. No design is allowed in theory, however much is covertly assumed in practice. The appetency works arbitrarily—if such a thing is possible—in the dark, with no plan and no intelligent power to direct it. We have seen that, according to Laplace, the odds against the possibility of merely the bodies of our one solar system arranging themselves by chance, are two hundred thousand billion to one! What the odds would be that the innumerable bodies composing the infinite cosmos would not arrange themselves into an orderly system, is utterly beyond enumeration. Hence it matters not how long the agnostic takes to develop the universe. A beginning must be effected before progress can be made, and this prime requisite is not provided. These difficulties, or impossibilities rather, are usually concealed by the assumption of innumerable ages, as though time itself could effect anything. Time is the measure of events which take place in it, but does nothing of itself. So, at some epoch in the past the forces involved in appetency

must have begun to work, must have worked by some definite plan and by aid of adequate power, before any form, any body, or any system, could be produced. They probably called a convention of delegates—a typical democratic primary came together, and resolved on the plan of action, cut and dried in advance by the boss particles of matter which issued the call for the convention. After mutual consultation it was determined no longer to repel each other nor work in the dark, but change the mode of procedure by a “catastrophe,” and control themselves henceforth by design. Like Rousseau’s convention of philologists to form language before language existed, so the particles of matter by a *senatus consultum* determined they would no longer continue in the error of their ways, but would put Mechanical Causation at the helm of the cosmos—from which time they have harmoniously acted according to the development theory.

The agnostic unwittingly introduces us to the condition of things portrayed in revelation, “without form and void,” when his work begins, of course entirely accidentally. Yet this accidental system proceeds invariably toward that which is definite, regular, and self-perpetuating. Nay, more. He assumes a new principle, *purely by accident*, viz., “the survival of the fittest.” Why the fittest, rather than any other form? It is only intelligence which can discern what is fittest. There was absolutely no reason in the nature of things, so long as the elements were controlled by chance, that mere appetency should continue to develop them into more regular forms. There is another alternative, viz., that there should be a retrograde movement, and reduce all the development gained at any time to chaos again. This fitness cannot be produced in the first place, nor survive subsequently, unless according to some law which looks to the well-being of that already developed. To insure well-being requires attention to an infinite variety of details, and the conservation of the development process at every step. Mere appetency is inadequate for this, as has

been shown. So the agnostic with characteristic naïveté assumes intelligent qualities, inherent in matter, to effect his development. But these successive assumptions involve all that is understood by superintending design, power, and will. These constitute personality, no matter where found or how manifested. If a purpose be steadily kept in view, that the development of nature shall be along the line of fitness, that fitness must be both seen and adhered to perpetually. For while an infinite variety of particulars must be involved, in order to produce the fittest, a failure of this result will be inevitable every time an error is committed in the case of any one of them. And it will be impossible to guard every step, when working at random, to prevent error in the manipulation of countless materials and forces, unless it be by a superintending intelligence; which in the bare contemplation of its task is seen to be omniscient and omnipresent.

The Survival of the Fittest is the law which obtains when constant care is exercised by superintending intelligence, but is never secured by allowing the powers of nature to work in their own way. Excellence in any of the works of art is secured only by the most persistent attention directed by the highest wisdom. Excellence in the animal kingdom does not come spontaneously nor by accident. Animals which multiply prodigiously, and under untoward conditions, are those which are of little use and have great powers of consumption. So of noxious weeds and useless plants. But the finer qualities of all animals which especially contribute to man's use are developed by constant and intelligent supervision; and as soon as this is withdrawn they deteriorate. So of fruits and flowers. The pomologist and florist not only labor assiduously to produce the best varieties, but must exercise unceasing vigilance to maintain them. It is certainly a notorious truth that the character of man's body and spirit is elevated only by faithful nurture and persistent guardianship. And when these are withdrawn it requires but a little time till man will return to

savagery, as we see in the case of a child who is permitted to go his own way. These results are seen in the case of species even after they have been greatly developed, and therefore seemingly able to take care of themselves. Hence, if intelligence, design, and constant care are necessary still to maintain the results after they are achieved, then, *a fortiori*, they were at the beginning of the development, when there was so little, only appetency, to direct the senseless matter. But whatever forces were displayed in the subsequent development must have been contained potentially in the appetency itself, if they were not imported into the matter by some Power or Being *ab extra*. For it will not do, if the agnostic proceeds by rigidly scientific methods—and he would scorn all others—to say that after appetency had brought the particles of primordial matter together, gradually new powers joined themselves as they were needed. For where did they come from if they were not in the matter itself? Did they attach themselves after the fashion of growth in plants by ingrafting, or in the lowest forms of animals by gemmation? The attainment of new energies is covertly assumed by the naturalist as though they could come of themselves, as though they sprang from nowhere, and yet came just as they were wanted—until there were intelligence and force enough to develop a universe in its infinitude of extent and minutiae of organization.

The alternative is inevitable. Either the material of the infinite cosmos received its form and organism from a power which controlled it—which supposition involves a personal Creator and one of infinite power, since he who controls must be greater than that which is controlled—or else all that is involved in the subsequent development is contained potentially in the first move of appetency. For it is an accepted principle of philosophy that the effects must all be contained potentially in the causes. Thus all power, intelligence, and provision which were requisite to the formation of the universe

were involved in the first movement toward the completed result. On the one side, the infinitely little, displayed in the tiny yet complete organism of the animalculæ which sport in the drop of stagnant water, each with its muscular, nervous, and digestive systems perfectly developed as far as our glasses enable us to look (and who shall say that nature ends where our powers of observation stop?); on the other, the intricate maze of suns and systems, moving on in orbits so perfectly adjusted that their positions can be foretold by even our imperfect science for thousands of years to come,—all these absolutely countless parts of the universe were provided for at the very beginning. For they belong to a system of which one is so dependent upon another that the naturalist himself says there can be no interruption of the plan, even for a purpose the most important and far-reaching in its consequences that we can conceive. Nay, so completely does the universe subservise a design, that it cannot for any reason whatever depart from it; and we had better believe any absurdity, however glaring, rather than that miraculous agency should interfere.

Truly all the evidences of design are involved in appetency, or mechanical causation, in the construction of the cosmos; and the proofs are so many and so clear that no man can deny them without stultifying himself. If they were the endowments of matter, they involve all that the theist requires to constitute the being of a personal Creator. For there is no instance in the experience of men where design is exercised without personality. And we have no right to make any assumption, directly counter to all the knowledge we possess, in order to prove a theory which can be better established on accepted principles. It is contrary to the constitution of the mind; and for that reason, if no other, inadmissible. It relieves us of no difficulty in the construction of the cosmos to say that the power and the intelligence resided in the matter itself, and developed it into the myriad forms we now find in the universe. They existed somewhere, and they acted ac-

according to laws the most perfect, the most minute, the most beneficent, that can be conceived. Who, then, is justified in making the gratuitous assumption that these laws were self-enacted, that they are self-executed, and that they are immanent in matter? We have never experienced anything resembling this. So far as we can see, everything that is made has a maker: every law that controls has a personal legislator to devise and execute it. If the universe was formed in any other way, we know nothing of such a method in the world's history. Any other method is contrary both to our scientific principles and modes of thought. It may be impossible for the finite man adequately to conceive of the Infinite Creator, just as it is to comprehend even the visible universe; but it is according to our modes of thought that there should be one capable of forming it. It may be possible that the Creator and his works are all one, that creation is evolution of the Divine sufficiency, which was immanent in him till this was embodied in matter and made visible to the apprehension of the senses. Thus pantheism may be the true doctrine, and at least is not as revolting to our inner consciousness as that chance created and superintends all things. But this idea does not agree with our knowledge—so far as it reaches. For we see the maker and the thing made, the phenomena and the power which produced it, different—separated by the forms of language which are the best witnesses to the truths of our spiritual nature. We see the material under the control of the spiritual, the body moved by the invisible power; and we are compelled to project this, the only mode of thought which agrees with what we see, into the sphere which is beyond our sight and knowledge. To construct the universe on any other theory has no shadow of proof in the nature of things, and is diametrically contrary to all the knowledge derived from experience. The appetency of the agnostic involves design, and design necessitates intelligence in constructing and maintaining all things. We can have no possible conception of intelligence

apart from a person to exercise it, and so all our modes of thought require us to believe the universe to be the work of a personal God.

L'ENVOI. If a crook expended as much ingenuity in an honest calling as he does in attempts at deception, he would become rich and gain an honored place in society. So, if an agnostic devoted as much talent to prove that he has a mind, as he does to show that *he* knows nothing, and that there is no directing Intelligence in the universe, he would make his doctrines agree with the demands of common sense, and win a name in philosophy!