III.—THE INDUCTIVE ARGUMENT FOR DESIGN.

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I.

IN this paper it is proposed to take stock of the results of recent research on the eternal problem of natural design. It is justifiable to do so, since the Gifford Trust has specially fostered the defensive side of the argument, and has drawn into this service the most eminent philosophers and theologians. Some of these writers, notably Prof. Ward, have changed the whole aspect of the discussion by abandoning the inductive grounds on which the design argument so long rested, and by appealing to broad metaphysical theories of the adaptation of nature to thought. Further, the prevalence of what is generally known as the Idealistic method of philosophic reasoning itself places the inductive argument in a less predominant position; for the whole tendency of Idealistic philosophy is optimistic and religious, and if the structure of the universe can be proved spiritual we can take the mechanism on trust. I have given reasons for doubting the cogency of both these lines of argument.¹ It appears to me also that all attempts to extrude the direct evidence of natural facts and processes will fail. If much of this evidence seems to cut two ways, or to be vague and tentative, that is perhaps because no criterion has been applied to distinguish the valid from the invalid. Religious faith, at any rate, cannot rest very securely on the position that, though there are deductive reasons for believing the world to be purposeful, we are practically unable to verify these in the concrete; so that part of the universal design is self-concealment. The inductive argument is inexpugnable; it must still and always stand.

There are three assertions which can be made at the beginning. First, the design argument is not necessarily theological. The question is not of the existence of God, but of the validity of a predicate or category. Design is, like causa-

¹ *International Journal of Ethics*, January, 1906; *Hibbert Journal*, July, 1906.

tion, an aspect of natural events, though it groups these events in a different way. The sole question is whether some events or series of events are such that a purely causal explanation is not adequate, does not exhaust the content of the series. Second, it is idle to personify the forces of Nature themselves. Fifty years ago, Darwin impatiently pointed out that Natural Selection was a metaphor which need deceive nobody. Yet since then all the plausibility of some theological reasoning is based on the personification of Nature. For when Nature is personified, she becomes a person of such majestic stamp as to be at once invested with all the sublimest attributes of power, and rationality, and foresight. Mr. Balfour, for instance, employs this method to write down Naturalism; an authority like M. Janet slips into the same temptation.¹

Third, and most essential of all, it is quite necessary to exclude from the evidence for design all results which we know to be partially or completely the results of the efforts of finite intelligences. If I make a machine for my own use, it is no evidence of natural design that I can use it. That things are capable of manipulation is implied in the laws of causation; but design rests on the idea that manipulation is not required, the result being brought about without it, either in those cases where we could have done it ourselves, or in those where the vastness or infinite detail of the result denied us the power. Every extension of the evidence for finite endeavour is a bar to teleological reasoning. These two vary inversely.

The marks of causation are uniform and necessary sequence; those of design are contingency and utility. The evidence to look for is that of series of events which converge in useful results, with no known cause for the convergence. So far or as soon as we account causally for the convergence there ceases to be a design argument from these series. Finite endeavour is one of the causes which thus discount a teleological inference.

As a final preface, we must meet the assertion that by our definition there can be no teleological evidence at all in nature, since all natural facts are causally connected with each other, in one broad network of relations, which allows of no contingency or accident. Such a reply would misunderstand the position. It is granted that this causal interconnexion exists everywhere; only it does not exhaust the content of some series of events. Let us take two events, A and B, and call the whole natural system X. Then A and B are

¹ *Foundations of Belief*, seventh ed., pp. 70, 79; *Final Causes*, p. 198.

fully explained causally by (X-A) and (X-B). But there is coincidence if the reference to X is superfluous, so that A and B explain each other. A is not a complete causal explanation of B, nor B of A; yet they make subordinate the mediation of X, and stand directly related to each other. These are the coincidences on which the design argument rests. The causal explanation is not adequate to the entire series of events and relations that is given. A general objection to teleological evidence cannot therefore be maintained.

II.

When, with these provisos, we turn to the inductive argument for design, we find a dilemma. The evidence is greatest in amount where it is least convincing; and where it would be most convincing it scarcely exists at all.

Where ought we to look for the strongest evidence of natural design? Not, it is clear, to results brought about by human creation; these have already their adequate causal explanation. Further, it is clear that instances drawn from beyond the human sphere will be more cogent in proportion as they are farther removed from this domain of conscious agency. The nearer they stand to this domain the less certain we can be that they are not adequately explained by finite volition, clear or dim. Throughout the whole organic world, however, the factors of pleasure, pain, and volition are operative on a continuous gradation of planes of intelligence. The tendency of organisms to seek pleasure and avoid pain, their powers of association and recollection, give us strict causal explanations of a multitude of biological results, so that no further cause need be invoked. We ought to look to the inorganic world for the strongest teleological evidence. Here at any rate we are sure that conscious agency is eliminated, and if there are adaptations realised here, which are useful in a high degree, we are strongly placed for the assertion that purpose is a feature of the natural universe, no less than causation and reciprocity.

But as soon as we glance at the inductive case for design, we find that the tendency is to draw the evidence almost exclusively from the biological sphere. We hear no more of the litho-theologies, helio-theologies, and hydato-theologies of mediæval speculation. And if we take our evidence from the conduct and structure of living things, which to some extent can guide their own activities, and create their own pleasurable results, we cut the ground away from the design argument, whatever else we substitute for it. This dilemma.

is rendered the more acute because the biological sphere is that in which the rival hypothesis of evolution holds good, explaining by sentient and quasi-volitional forces the growth and mutual adaptations of organisms to organisms or to the environment. From the sphere where his evidence is less open to challenge, where his principle ought to apply with at least as much force as anywhere, the teleologist brings no evidence, and he comes into court with a prejudiced case.

It is not difficult to substantiate the fact that it is on the organic world that induction now relies. Such a book as M. Janet's discussion of Final Causes is full of proof of this. "Let the problem," he says, "be well understood. On the one hand, the final cause is incontestably manifested in the psychological sphere; the question is whether it is manifested lower down. On the other hand, the mechanical cause is evidently manifested (at least, as far as appears) in the inorganic sphere; the question is whether this kind of cause suffices higher up. Between the psychological and the inorganic domains extends the domain of the living organism—that is the tourney-ground of the two causalities, the two methods of explanation."¹ It is this "middle space" he elsewhere asserts to be "the object of debate".

To take another authority. "Even if," writes Sir George Stokes (and the concessive form may be remarked), "the evidence of design in the adaptation of inanimate environment to the wants of future living beings were deemed to have failed altogether, there still remains the consideration of the adaptation of living things to their environment supposed given. To my own mind, it is in living things, especially animals, that the evidence of design is the strongest. And the higher we ascend in the scale, the stronger it becomes."²

For the sake of teleology, the converse had better have been true—that the evidence is stronger as we go lower down. The instinct of the bee is a better instance than that of the ape, since there is less reason to suppose the creature's own intelligence to be a sufficient explanation of its skill. But here again it is enough to note the tendency to limit evidence to the organic.

Mr. Balfour, again, writes as follows: "Natural Theology dwells principally upon the numberless examples of adaptation in the organic world, which apparently display the most marvellous indications of ingenious contrivance and the

¹ *Final Causes*, p. 177.

² *Gifford Lectures*, first series, p. 39.

nicest adjustments of means to ends. From facts like these, it is inferred that Nature has an intelligent and powerful creator."¹

And, very recently, one of the much-debated instances which seemed to extend the notion of finality into the inorganic world—the formation of the crystal—has been given away by Lord Kelvin, in a remarkable letter. Let us note the deliberate stroke of the pen by which he deletes the inorganic from the evidence for theism. Writing to the *Times* in May, 1903, he says:—

"In your report of a few words which I said in proposing a vote of thanks to Professor Henslow for his lecture 'On Present Day Rationalism' yesterday evening, in University College, I find the following: 'Was there anything so absurd as to believe that a number of atoms by falling together of their own accord could make a crystal, a sprig of moss, a microbe, a living animal?' I wish to delete 'a crystal,' though no doubt your report of what I said is correct. Exceedingly narrow limits of time prevented me from endeavouring to explain how different is the structure of a crystal from that of any portion, large or small, of an animal or plant, or the cellular formation of which the bodies of animals and plants are made; but I desired to point out that, while 'fortuitous concourse of atoms' is not an inappropriate description of the formation of a crystal, it is utterly absurd in respect to the coming into existence, or the growth, or the continuation of the molecular combinations presented in the bodies of living things. Here scientific thought is compelled to accept the idea of Creative Power."

These statements are sufficiently typical, as any one may see who reads M. Janet's classical study of *Final Causes*. There is nothing inherently wrong in the method of the inductive argument for design: the confession of weakness is in the nature of the evidence adduced. Two steps can be taken to remedy the defect, and restore their evidential value to the "choir of heaven and furniture of earth". Research may extend the evidence by demonstrating the utility of inorganic adaptations; or the rival theory of evolution may be combated. Waiving the former, let us consider for a moment how it stands with the latter policy. Two lines may be followed. The validity of Darwin's principles may be challenged, or it may be claimed that they imply purposive factors which render Evolution itself a teleological process.

¹ *Foundations*, p. 176.

III.

It is difficult to find among modern philosophers a clear statement of how they regard Darwin's theory. Sometimes arguments are employed which clearly ought to put Darwin out of court; for instance, there is the general theory that any evolution of the intelligent from the unintelligent is absurd, since the statement of the process itself "implies intelligence". Or, again, it appears to be held by Prof. Seth that any evolution of the higher from the lower—which appears to mean any evolution at all—is not possible.¹ On the other hand, the standpoint of evolution is just as often implicitly accepted, and Prof. Ward seems content to take the second method of discussing it. While men of science have enthusiastically accepted and expanded Darwin's reasoning, it is scarcely possible to say what speculative thinkers make of its results. We still await an explicit verdict.

Darwin left it open to his critics to take two positions of attack, both of which would still be well chosen. In the first place, similarities of type must be admitted to exist between organisms, such that it is a legitimate speculation to inquire what is common in these structures, and how the common element is related to the variations. Yet it is possible to object that a logical relation of similarity amid a number of variations cannot at once be translated into an order of development in time. The right to take this step must depend on more than the similarities themselves; these only indicate analogies, but analogies do not always mean common origin. Like the theory of creation, that of common ancestry is a possible descriptive hypothesis; either will fit the existing facts. Lower and higher, decadent and progressive, structures give to the biological system a continuity which is certainly translatable into terms of historical evolution, but which *need not* be carried beyond a purely static gradation of forms. It has often been asked—Who has seen Natural Selection at work changing the type? And Darwin, as we know, answered this question by drawing on indefinite time, a reply which is no solution. I think that on this preliminary ground a demurrer could still be maintained.

The second position of attack which Darwin left open has reference to his factor of variation. He insisted that no

¹ *Man's Place in the Cosmos*, Essays I. and II. especially, pp. 15-17: "All explanation of the higher by the lower is philosophically a hysteron-proteron"

theory could explain this factor. It is haphazard and unaccountable. A variation is not due to Natural Selection, which can only get to work on given varieties. "A variety when once formed must again perhaps after a long interval of time, vary or present individual differences of the same favourable nature as before; and these must be again preserved, and so onwards step by step." We are quite ignorant, he insists, of the causes of variations. They occur, and competition fastens on them. Now evolution is merely progressive variation; and clearly a theory of evolution is severely taxed if it must simply assume variation. It becomes, to a great extent, the statement of a series of changes of which we can only say that they occurred, and were by competition maintained. A theory of the *growth* of species might well enough assume origins and dwell on development; but Darwin deals with the origin of species. We have a process which lacks necessity and continuity, and which concealed this fact by the claim that time was infinite enough for all the possibilities to have come about. And Darwin admits this. "I believe," he says, "in no law of necessary development."¹ This is an enormous, but quite a necessary admission. We translate a similarity of forms into a temporal order, by supposing that variations happened and endured; that others subsequently happened, coincided with the former, and also endured, and so forth!

It can be replied that we can easily parallel this conception of development in cases where variation is equally accidental. Thus if a man goes to the Bar, his becoming Lord Chancellor depends on the chance of his first brief, *plus* the chance that he won his case, *plus* the chance that note was taken of his success, *plus* the chance that another brief followed before the last success was forgotten, *plus* the chance that he won the second case, and so forth. These chances are the explanation, to a great extent, of his final position; there is no "necessary development" here either. But this eludes the point, chiefly because it deals with individuals not with types. If a new society of lawyers were founded, a Lord Chancellor and Crown Counsel would be appointed straight off, who might never have 'evolved'. And our question is precisely whether the theory of historical development is complete enough to entitle us to translate similarities and variations into a time-order at all.

Darwin himself sometimes spoke of "Laws of Variation," and his successors have in various ways sought to rationalise

¹ *Origin of Species*, ch. iv.-v.

this factor.¹ But in both Darwin and Wallace this is a loose use of the term "Law," and it refers to a mere statement of the fact that variation occurs. Lamarck went further, and the tendency is now to make variation itself a product of selection, as the fleetness of a beast of prey is explained by the fleetness of the prey. A great deal of work is still being done on biological variation, and it is likely that this flaw in Darwin's hypothesis will be made good.

And even if the "natural theologian" could maintain the attack on such grounds as these, it would profit him little to cast doubt on Evolution. The overthrow of this theory would not leave the design hypothesis master of the field. So long as the evidence is limited to organisms, which can guide their own actions by recollection and association of pleasures and pains, it will not be a contingent but a necessary result that there are pleasurable adaptations on the whole. Many theological attacks on Evolution assume that more is to be gained for theology by its fall than would actually be the case.

IV.

Nor is the outlook more hopeful if the method is adopted of seeking to prove Evolution itself a teleological process, in that the selfish endeavours of organic beings lead without foresight to fortunate results on a wide scale.

There is a consensus of authorities for the opinion that Evolution cannot be as a whole regarded as a progress toward what is better. The very phrase "survival of the fittest," which seems to have an optimistic ring about it, is deprived of this significance by parties on both sides. Huxley, indeed, describes it downright as "the fallacy of the fittest".

"Fittest," he says, in his Romanes Lecture, "has a connotation of best ; and about best there hangs a moral flavour. In cosmic nature, however, what is fittest depends upon the conditions. Long since, I ventured to point out that, if our hemisphere were to cool again, the survival of the fittest might bring about, in the vegetable kingdom, a population of more and more stunted and humbler organisms, until the 'fittest' that survived might be nothing but lichens, diatoms, and such microscopic organisms as those which give red snow its colour ; while, if it became hotter, the pleasant

¹ Wallace, *Darwinism*, ch. i.

valleys of the Thames and Isis might be uninhabitable by any animated beings save those that flourish in a tropical jungle. They, as the fittest, the best adapted to the changed conditions, would survive."

This conclusion has been endorsed by Mr. Spencer. "The law is not the survival of the 'better' or the 'stronger' if we give to these words anything like their ordinary meanings. It is the survival of those which are constitutionally fittest to thrive under the conditions in which they are placed; and very often that which, humanly speaking, is inferiority, causes the survival."¹

In Darwin's principles alone, Prof. Ward writes, "there is nothing teleological: neither struggle for life, nor selection by nature, nor survival of the fittest, but simply conservation of the stablest".²

We have no guarantee, it would therefore seem, that Evolution is a tendency toward a greater good. It is void of moral significance altogether. Whatever is, is good, whether the process were to face the other way or not; and we have no warrant that it will continue on its present lines of development.

I think that this gives away too much. It is in a sense true to say that the survival of the fittest is only the survival of that which survives. But in the same way it would be a truism that the market price of an article is that at which the quantity bought is equal to the quantity sold. These, however, are truisms because they take no account of the nature of the competition, but state only the fact that competition tends to equilibrium. The Economic idea must take note of the positive factor of utility in the thing bought and of sacrifice in the thing sold; and then it is no longer a truism but a statement about human nature—that no one makes a sacrifice (in the business world) without an equivalent reward. And if we fill up the content of biological evolution in the same way we see that what survives is that which takes pleasure in such acts as conserve its being, and finds pain in such as destroy it. Those organisms which remain are not merely such as are there *de facto*, but those which have on the whole a pleasanter or less painful existence than any others which were possible. Even if the sentient world gave way altogether to the lower organisms, that would at least be better than its survival in perpetual pain. And as pleasure-pain is the main content of the

¹ *Essays*, vol. i., cf. A. Seth, *Man's Place*, etc., p. 16.

² Vol. i., p. 275.

good from the biological standpoint, Evolution cannot be dismissed as utterly a non-moral process.

Still, this result is unsatisfactory. For we can only speak in negatives. We cannot say that the sum of pleasure tends to increase from generation to generation, but only that there is less pain than would have been otherwise. The sum of pleasure might be diminishing, and we should have the cold comfort of reflecting that possibly it might be diminishing faster than is the case. Can we base any kind of optimism on considerations of what might have been, but is not? or on evil which might have been greater, but is not? It is very doubtful if any one would accept a teleological argument based upon negatives. If organic life ceased altogether, and material forces had their own way universally, it would be absurd to regard this as teleological, because there was no pain. In the general sense of the word, therefore, Evolution cannot be regarded as itself purposeful.

V.

Since even the indication of flaws in the argument of Evolution would not leave the design argument in a much stronger position so far as the evidence of the organic world is concerned; and since there appears no tendency to find evidence in the more convincing inorganic sphere, for both these reasons, the form of the inductive argument for design has changed, so as to give quite a new meaning to the conclusion that it is sought to establish.

The most recent form of deductive reasoning on this subject was that in which it was indicated that, letting alone the wheels within wheels, there remained the broad fact that the laws of nature were adapted to the constitution of man, being uniform so that he could think them, and manipulate for his own ends chains of causes and effects. This is teleology in its very widest aspect. And, corresponding to this deductive argument, the inductive argument has proceeded to show that particular organisms (for its evidence remains organic) strive on their own behalf to realise their own good and that of their kind; so that there is more than mechanism, there is 'anabolic' process or continual subjective endeavour toward improvement, in the biological world, which therefore is throughout purposive.¹

It is legitimate that the argument should in this way change its form, provided the change is noted, and it is under-

¹ *Naturalism and Agnosticism*, vol. i.

stood that 'purpose' is being given a new meaning. We are now referring to a number of purposes, not to a general purposiveness; to finite endeavours, not to arrangements which dispense with the necessity for endeavour. In short, this is the substitution of an ethical and subjective for an objective and metaphysical form of design.

Many of the historical abuses of the design argument are nothing but the confusion of these two different things. If a thing is created by finite beings for themselves, the further hypothesis of a foreordained arrangement is superfluous and often ridiculous.

For example, Chrysippus took as evidence of Divine providence the fitness of the ox for ploughing, of the horse to ride on, of the dog for hunting. Epictetus tried to show that the ass was fore-ordained to bear burdens. Fénelon asserted that water was created "in order to sustain those immense floating edifices which are called vessels. The ocean which seems placed between the continents to divide them for ever is, on the contrary, the meeting place of all nations"—an argument similar to that of Izaak Walton, who pointed out that the sea alone enabled us to sail to Venice and see the pictures. According to B. St. Pierre, "dogs are usually of two opposite colours, one dark and the other light, in order that wherever they may be in the house they may be distinguished from the furniture". The literature of Stoicism is full of such arguments, as is also that of the Schoolmen.

How Voltaire made merry over them is well known. Was the nose, he asked, made to carry spectacles, or the cork-tree to cork bottles?

What Prof. Ward calls 'teleology within the range of biological ideas' is a new conception of the inductive argument for design, and yields a totally different conclusion as to the nature of the world. Its strength varies inversely with that of the objective design argument of the "natural theologians"; it lessens the need for the hypothesis of Providence.

But it may well be claimed that by this change of form the inductive argument is made more and not less valuable; that causation is of greater worth than fore-ordination. This seems to me true, provided that one thing can be proved—that all these finite purposes work together, so that they are added, and do not cancel each other in the result. This cannot be proved inductively. It requires some sort of deductive proof of the unity of the world. It must be shown that individuation has some counterpart of integration.

VI.

Lotze is the only philosopher who ever tried to prove the unity of the whole world, spite of the self-distinction which gives each individual its own degree of independence. His argument is classic, and is as follows.

He takes it for granted that the internal modification of a thing by its own organic processes is conceivable, since we are here dealing with continuous changes. But when we ask how one thing can influence another thing, we cannot represent to ourselves the process implied, and so we are driven to conclude that there is no such thing as "transeunt action," and that all apparent interactions are but modifications of one all-including reality.

Here is the proof that the interaction of independent things is inconceivable. When a body A acts on a body B, we must suppose, if these are independent of each other, that some state E passes **over** from A to B. "But, granting that E could separate itself from A, what gave it its direction at the particular moment to B, rather than to C? If we assume that A has given it this direction, we presuppose the same process of causative action as taking place between A and E for which we have not yet found an intelligible account as taking place between A and B. Nor is this all. Since it will not be merely on B and C, but presumably on many other Beings that A will put forth its activity, we shall have to ask the further question what it is that at a given moment determines A to impart to E the direction towards B and not towards C, or towards C and not towards B?

"Finally it is important to realise how completely impossible is the innocent assumption that the transferred E will all of a sudden become a state of B, when once it has completed its journey to B. Had this homeless state once arrived at the metaphysical place which B occupies, it would indeed be there, but what would follow from that? Not even that it would remain there. It might continue its mysterious journey to infinity, and, as it was once a no-man's state, so remain. For the mere purpose of keeping it in its course, we must make the yet further supposition of an arresting action of B upon it. And given this singular notion, it would still be a long way to the consequence that E, being an independent state, not belonging to anything in particular, should not only somehow attach itself to the equally independent being B, but should become a state of this B itself, an affection or change of B. These accu-

mulated difficulties make it clear that the coming to pass of a causative action can never be explained by the transfer of any influence."¹

Now if space were considered real, the impossibility of conceiving such processes as detachment, direction, and attachment, would certainly tell against the argument for independent things. But in the beginning of his second book, Lotze cuts the ground clean away from this position of his by arguing that space is not real, but only phenomenal; a form of the mind, not an aspect of things. He proves this by a very closely reasoned metaphysical discussion, which aims at showing how impossible it is to conceive space as belonging to reality itself. But if this is so the argument against independent reals, so far as based on the inconceivability of transeunt action, disappears; for it is no argument against a theory of reality that it renders impossible a process in a medium which is not real.

VII.

The more the inductive argument for design takes the method of demonstrating finite purposiveness, the more it will become dependent on some valid proof of the unity of the world. Otherwise it is clear that the tendency is to disintegrate the conception of teleology, and substitute the conception of strife. Most proofs of the unity of the world have failed, like that of Lotze, because by an inveterate habit of philosophic thought, it is constantly assumed that the only true notion of unity is that of comprehensiveness, or interpenetration of parts, or interfusion. The result is that at once we have space metaphors and the paradoxes of continuity. There is no need to create these difficulties, which beset nearly every form of Pantheism.

Unity can be represented in other ways, which do not confuse thinking with pictorial imagination. Thus a mathematical formula represents a unity, a relation which is valid for a large number of individual cases, a law which they obey. It is a more valuable idea of the unity of the world to consider that what is sought for is some "expression for" the joint activities of individuals, not some receptacle which literally includes the individuals. Lotze went some way in this line of reasoning, though he continually lapses into the space metaphor. The notion of the unity of the world, in which individual purposes are allowed for and related to each other, seems to be best represented in a formula which

¹ *Metaphysics*, § 56.

is dynamic as well as static. To pretend to entertain the idea of "getting an expression" for the meaning of the world is to lay oneself open to ridicule. My point is that this is a better *method* of representing the unity of a world of purposeful individuals than the method of showing that they are not individuals at all, but parts of some sort of continuum. These reflexions are led up to by the modern change of face in the design argument.