

material world is an organism, namely, a primitive "cosmorganic" condition of our earth. This primitive matter has gradually differentiated itself into the regions of the organic and the inorganic, and the former again into the animal and vegetable kingdoms. Consciousness was breathed into the cosmorganic matter by the Creator and so pressed out, as though from the bellows of an organ, into all living creatures. This process of evolution is directed towards an end, namely, the greatest possible degree of mutual adaptation of parts, or the most stable condition; and conscious action is but the subjective side of this tendency.<sup>1</sup>

*Lotze.*—The mechanical view of the world, as wrought out by modern science, is fully recognized and yet surmounted in the cosmological doctrine put forth by Hermann Lotze in his *Mikrokosmos*. Lotze defends the mechanical method as applicable to all departments of phenomena, and insists on this way of viewing organic processes. At the same time he holds that the mechanical interpretation of nature is limited at every point. The inadequacy of this view may be seen in the attempt to apply it to the question of the genesis of the world and its order. On the one hand, Lotze accepts the teachings of modern speculation respecting the evolution of the solar system, the genesis of the organic out of the inorganic, the continuity of man with the lower animal world; and his exposition and defence of this idea of evolution as the result of mechanical laws is extremely able and interesting. Again, Lotze seeks to bridge over the gulf between material and spiritual evolution by bringing human development into close relation to the processes of nature as a whole. Yet, while thus doing justice to the mechanical conception of the gradual genesis of the world, Lotze strenuously affirms the limitations of this kind of explanation. In the first place, he maintains that the mechanical processes themselves cannot be understood except by help of ideas respecting the real internal nature of the elements concerned. This nature he describes as life, and thus he endows all parts of matter with feeling (though he distinctly rejects Czolbe's idea of a world-soul which includes these feelings). In this internal activity Lotze finds a teleological element, viz., a striving towards self-preservation and development. This idea he seeks to blend with that of mechanical relations among the elements, so as to make the whole upward process of physical evolution the product of purposeful impulses. Thus the first genesis of organisms is represented as a combination of elements (accidentally meeting), through which there is effected a summation of the separate ends of the elements, to a purposeful equilibrium of a composite whole.<sup>2</sup> This may be called the first stage of his teleology. In addition to this, Lotze looks at the world-process as a gradual unfolding of a creative spiritual principle, which he sometimes figuratively describes as the world-soul, more commonly, however, as the infinite substance. This assumption, he says, is necessitated by the very process of cosmic evolution, the absolute beginning and end of which we are wholly unable to conjecture. However far back the evolutionist may go he always has to assume some definite arrangement of parts,—some general laws of action of which he can give no account. The conception of the atomists, that in the beginning of things

<sup>1</sup> In a new edition of his work Fechner avows himself a convert to Mr Darwin's theory of organic descent.

<sup>2</sup> Lotze does not express himself very clearly with respect to the question of the first genesis of mind. In the *Mikrokosmos* (ii. p. 33) he appears to find the "sparks" of mental life in the atoms which he here conceives of after the manner of Leibnitz's monads. In another place, however (*Medicinische Psychologie*, pp. 164, 165), Lotze tells us that mind is the direct product of the original creative activity, which is stimulated to create by the stimulus involved in the formation of the physical germ.

there was an indefinite number of possibilities, is unthinkable, and the modern doctrine of evolution, by conceiving of the existing world as a survival of certain forms from among many others actually produced, but lacking in the conditions of stability, plainly makes no such absurd supposition. Hence, there must always be a certain order to be accounted for, and science is wholly inadequate to effect this explanation. This conducts to a teleological view of the world-process, as directed by mind towards some end which we cannot distinctly recognize. Lotze's criticisms of previous attempts to formulate the end of the world-process are not the least valuable part of his discussion of the problems of evolution. He shows that neither the notion of a progressive effort towards the highest unfolding of mental life, nor that of an impulse towards the greatest variety of manifestations of one and the same fundamental form, adequately represents the order of organic forms. Here Lotze shows again a due recognition of the mechanical aspect of the world-process, and argues that the evolution of the organic world is no immediate consequence of the self-evolving ideas, but only the form in which the commands of these ideas are capable of being realized on our earth,—that is to say, with our terrestrial conditions. A somewhat similar view of cosmic and organic evolution, as at once a mechanical and a teleological process, is to be found in Ulrici's *Gott und die Natur*.

*Mechanical Doctrines of Evolution.*—Over against these attempts to carry up a mechanical conception of evolution into a teleological must be set a number of works which content themselves, in the spirit of positive science, with expounding a doctrine of evolution on a strictly mechanical basis. Of these we may first mention C. Radenhausen (Isis), who, in his interesting work *Der Mensch und die Welt*, expounds the idea of a gradual evolution of the solar system, the earth, and organic life. In the growth of the individual man the past evolution of the world is represented. A temperate statement of the doctrine of modern evolution is to be found in Dr Ch. Wiener's volume *Die Grundzüge der Weltordnung*. The problems of the origin of organic life and of the genesis of the nervous system are both said to be as yet insoluble. With this may be compared another interesting presentation of the doctrine of evolution,—namely, H. J. Klein's *Entwicklungsgeschichte des Kosmos*. The mechanical causes of evolution are clearly set forth in a work of the Herbartian C. S. Cornelius, *Ueber die Entstehung der Welt*. Cornelius argues against Czolbe's hypothesis of the past eternity of organic life. Organisms first arose under some quite special physical conditions. A very curious feature in this volume is the criticism of Mr Darwin's doctrine of descent, which is said to involve mystical ideas, &c.

*Lange.*—Among later works touching on the problems of evolution the *History of Materialism* of Lange deserves mention here. Lange accepts the modern hypothesis of evolution, and justifies the mechanical conception of its various stages. It is true that in his criticism of Mr Darwin's theory he assumes some internal formative principle (as held to by Nägeli and Kölliker) as supplementary to the factor of utility emphasized by Mr Darwin. Yet he does not appear to regard this process as other than a mode of mechanical action. Lange's greatest difficulty in view of a consistent materialistic doctrine of evolution is to explain the genesis of conscious life. The difficulty of the atomistic theory, even when we add a rudimentary sensibility to the elements, is to determine "where and how the transition is effected from the manifoldness of the collisions of the atoms to the unity of sensation." Lange supplements his mechanical view of the world by the Kantian conception of the adaptation of the world by reason\* of its generalities or uniformities to

our intelligence. He argues, with Lotze, that in seeking to frame a theory of physical evolution we must always assume, over and above the eternal atoms, a special initial arrangement of these, without which the order of events would be inconceivable. This modest kind of teleology (he says) is not only not opposed to Mr Darwin's doctrine; it is its necessary pre-supposition. "The formal purposefulness of the world is nothing else than its adaptation to our understanding." Lange seems further disposed to accept Kant's theory of organism as manifesting objective purpose, though he will not allow that this explains anything, all explanations being by way of the principle of mechanical causation.

*Noiré.*—In Ludwig Noiré we have a writer who accepts all the teaching of scientific evolutionists, and at the same time seeks to give to the doctrine a metaphysical and monistic interpretation. In his two volumes *Die Welt als Entwicklung des Geistes* and *Der Monistische Gedanke*, Noiré assumes the existence of elementary atoms or "monads" endowed with the twofold properties of motion and sensation. Time and space are not simply forms of intuition, but forms of appearance (*Erscheinungsformen*) of these fundamental properties. The process of evolution from the simple to the complex, has its ground in the latter property, sensation, which gives its direction to motion (which latter is unchangeable in amount), and which involves a tendency or impulse to further differentiation. The purposefulness of the process of evolution is due to its being the work of a mental principle (sensation). The formation of inorganic bodies is the preliminary step in the process, and involves an obscure mode of consciousness. The genesis of consciousness is said to be effected by means of a certain mode of collision among the atoms, though this point is not made very clear. Noiré's doctrine of evolution appears to waver somewhat between a mechanical theory (atoms endowed with sensibility, but acting according to strictly mechanical laws) and a distinctly spiritualistic and teleological doctrine, such as that of Schelling and Hartmann.

*Hartmann.*—The writings of E. von Hartmann have a special interest, as illustrating how Mr Darwin's doctrine of organic development is regarded from the point of view of a thorough-going metaphysical teleology. To Hartmann the world is a manifestation in time—which is real as applying to the activities of this principle—of an ontological principle, styled the unconscious, which is at once will and intelligence. The process of evolution, from the simplest material operations up to conscious human actions, depends on the progressive domination of will, which is the blind force, and answers to the mechanical aspect of the world, by intelligence, which gives to this force form and direction, and answers to the logical and teleological aspect of the world. The end of the process for which this unconscious makes is not, as Hegel says, self-consciousness, but non-existence, to which consciousness is the immediate precondition. Hartmann has devoted a separate volume to Mr Darwin's theory (*Wahrheit und Irrthum im Darwinismus*), in which he shows himself disposed to accept the principle of natural selection as the mechanical means which the unconscious makes use of in order to effect a certain amount of the upward organic progress towards which it strives.

*Influence of Darwinism in Germany.*—We will close the sketch of the recent German discussion of evolution-problems, and so our historical review as a whole, by a brief reference to the philosophic and quasi-philosophic literature which has sprung up in Germany under the direct influence of Mr Darwin's doctrine. It is not a little curious that, of the two great English evolutionists, the one who has most stimulated German philosophical thought is the writer

who has confined himself to questions of natural science, while the writer who has built up the idea of organic descent into a complete cosmological theory is only now beginning to be known in that country.

(a) *Darwinism and Methodology.*—First of all, then, a bare allusion must be made to certain criticisms of Mr Darwin's biological hypothesis as legitimate instruments of a sound natural philosophy. It may surprise some English readers to learn that the doctrine of the descent of species by natural selection has been denounced in Germany as partaking of the vices of a spurious and teleological natural philosophy. The writer who has taken most pains to show up the philosophic unsoundness of Mr Darwin's procedure is A. Wigand (*Der Darwinismus und die Naturforschung Newton's, und Cuvier's*, see especially vol. ii.)

(b) *Darwinism and Cosmology.*—Turning now to the influences of Darwinism on German thought, we may best begin with the more circumscribed branches of speculation. Physical speculation in Germany is being slowly affected by Mr Darwin's theory. A curious example of this is to be met with in a little work by Dr Karl du Prel, entitled *Der Kampf ums Dasein am Himmel*. This work is of real philosophic interest as illustrating how Mr Darwin's way of conceiving self-preservation, as the effect of natural superiority in respect of adaptability to the conditions of existence, may be extended beyond the organic world to the cosmos as a whole. Du Prel regards the cosmic bodies as analogous to competing organisms, space standing for the means of existence for which they struggle, and the force of attraction and the fitness of the body's movement in relation to those of other bodies representing organic efficiency. Those bodies which have these advantages survive, whereas those which lack them are extinguished either by being dissipated or fused with other bodies.

(c) *Darwinism and Anthropology.*—Passing by the biological speculations respecting the ultimate origin of living forms to which Darwinism has given rise, we pass to those aspects of anthropology which have a peculiar philosophic interest. In a sense it may be said that Mr Darwin's speculations, especially as carried out by himself in his *Descent of Man*, have powerfully influenced the whole of recent anthropological speculation; for writers like A. Bastian (*Schöpfung und Entstehung der Mensch in der Geschichte*), who still hold to the doctrine of the fixity of species, and the essential difference between human history and sequences of natural events, are now the exceptions. With anthropology, we must connect that new science of comparative human psychology (*Völkerpsychologie*) which has sprung up of late years.

*Origin of Language.*—Of the problems which fall under this science of man's genesis and development, none has more of philosophic interest than the question of the origin of language. This question, which lies at the very threshold of a proper understanding of the relation of man's mental nature to that of the lower animals, is touched on by Mr Darwin himself in his *Descent of Man*. In Germany it is being earnestly discussed by a number of writers, on whom the influence of Mr Darwin's theory of human descent is very marked. Among the writers who have explicitly applied the method of evolution, as defined by Mr Darwin, to the explanation of language, may be mentioned A. Schleicher,<sup>1</sup> L. Geiger,<sup>2</sup> Dr G. Jäger,<sup>3</sup> Wilhelm Bleek,<sup>4</sup> and Ernest Haeckel.<sup>5</sup> Jäger, who assumes that man is the immediate descendant of ape-like progenitors,

<sup>1</sup> *Die Darwin'sche Theorie und die Sprachwissenschaft.*

<sup>2</sup> *Der Ursprung der Sprache.*

<sup>3</sup> *Ueber den Ursprung der menschlichen Sprache.*

<sup>4</sup> *Ueber den Ursprung der Sprache.*

<sup>5</sup> *The History of Creation*, ii. p. 300 sq.

connects the first beginnings of human speech with a superiority in the command of the actions of respiration which is involved in man's erect posture.

(d) *Darwinism and Psychology*.—From anthropology we pass to psychology. Here the influence of Darwinism meets us too. Among recent psychologists W. Wundt, in his *Grundzüge der physiologischen Psychologie*, makes frequent use of the doctrine of a gradual evolution of mental dispositions by means of heredity. He would, for example, explain the rapidity with which the space-perception is formed in the infant mind by help of such an inherited disposition. Wundt appears to lean to the hypothesis of ultimate sentient elements, by the summation of whose rudimentary feelings arises the unity of consciousness.

The wider consequences of Mr Darwin's theory in the domain of psychology are briefly indicated by Dr Georg von Giz'ycski, in his little work *Die philosophischen Konsequenzen der Lamarck-Darwin'schen Entwicklungstheorie*. He argues against attributing sensation to all material things, which supposition (unlike Professor Clifford) he does not regard as a necessary consequence of the evolution hypothesis. He distinctly seizes the bearing of this doctrine on our conception of mind (animal as well as human) as identical in its fundamental laws, and as presenting to the psychologist a single serial development; and he still further follows Mr Spencer in connecting all mental activity with vital functions essential to the preservation of the individual and of the race. Finally, he adopts the view that the mental organism depends on the laws of the external universe. The harmony or adaptation which we see holding between thoughts and things must be interpreted as the effect of the latter acting on and modifying the former in conformity with themselves.

*Darwinism and Ethics and Religion*.—Passing now to the region of practical philosophy, we find that Darwinism has occasioned in Germany, as in England, a good deal of curious speculation. Among the many writers who have touched on the aspects of Darwinism we can only refer to one or two. Among these we may mention Dr Paul Rée, who, in a recent work, *Der Ursprung der moralischen Empfindungen*, argues that moral dispositions or altruistic impulses have been developed as useful to society, yet rather oddly combines with this idea the pessimistic doctrine that man is not on the whole growing more moral. Again Dr Giz'ycski, in the work just referred to, emphasizes the bearing of the doctrine of human descent on our feeling towards the lower animals as closely linked to ourselves. He goes on to show that this doctrine involves the most definite and stringent form of determinism, and so has a bearing on our ideas of right and wrong, blame, &c. The writer thinks Darwinism by no means excludes a teleological conception of the world as a process striving towards the highest manifestation of mental life, and this idea leading back to that of an absolute first cause of the order of the world, becomes the starting-point for religious and æsthetic aspiration. In Dr G. Jäger's work, *Die Darwin'sche Theorie und ihre Stellung zu Moral und Religion*, we find a practical deduction from Darwinism which curiously contrasts with that of Dr Giz'ycski. Jäger argues that this doctrine teaches us to place ourselves in the greatest possible opposition to the lower animals. The aim of morality, as taught by Darwinism, must be to develop to the utmost those excellences which mark off man from the brute. The author seeks to account for the genesis of social institutions and religious ideas, as utilities which benefited those communities possessing them in the struggle for existence.

A work in which are traced the ethical and religious consequences of the doctrine of evolution is *The Old Faith and the New* of David Strauss. According to Strauss, all morality has its root in the recognition and realization of

the idea of kind in ourselves and in others. He argues from the fact that nature has produced man as her last and highest achievement, and the lower forms of creatures but as steps in the progress towards man, that our end and aim must be the furtherance of that which marks us off from the brutes. Religion again begins with the sense of unity with nature, and the new doctrine of the cosmos enables us to regard nature as the source whence our life, as all life, springs.

*Interpretation of Modern Scientific Doctrine*.—A word or two, in conclusion, respecting what is known as the modern doctrine of evolution. It is important to emphasize the fact that this is a scientific doctrine, which has been built up by help of positive research. As such, of course, it embodies the mechanical, as distinguished from the teleological, view of nature's processes. Yet it still awaits its final philosophic interpretation. We cannot yet say under what head of our historical scheme it is destined to fall.

We think the question of the universal applicability of the doctrine to physical and mental phenomena may be allowed. There are no doubt wide gaps in our knowledge of both orders. Thus it may reasonably be doubted whether physical theory can as yet enable us fully to see the necessity of that universal process from the homogeneous to the heterogeneous in which evolution consists; yet in a rough and vague way the process is being made theoretically intelligible. Again, the transition from the inorganic to the organic is, as Professor Tyndall has lately told us, far from being conceivable in the present state of our knowledge; and this seems to be implied in the remarkable hypothesis by which Professor Helmholtz and Sir W. Thomson seek to account for the first appearance of life on our planet. Yet we may reason from the general tendencies of research that this step may some day be hypothetically explained in physical and mechanical terms. Again, in spite of Mr Spencer's brilliant demonstration of the general continuity of mental life, much remains to be done before all the steps in the process (e.g., from particular to general knowledge, from single feelings to self-consciousness) are made plain. Nevertheless, we may even now dimly see how such mental processes may be knit together in one larger process.

Allowing, then, that the doctrine of evolution as a scientific hypothesis is probably true, the question arises, what is its exact philosophic purport? How far does it help to unify our knowledge, and is it the final explanation of the complex events of our world?

First of all, then, as a unifying generalization, it is clearly limited by the fact of the correlation of mental and physical evolution. These two regions of phenomena may be seen to manifest the same law, yet they cannot be identified. All the laws of physical evolution can never help us to understand the first genesis of mind; and this difficulty is in no way reduced by Mr Spencer's conception of a perfect gradation from purely physical to conscious life. The dawn of the first confused and shapeless feeling is as much a "mystery" as the genesis of a distinct sensation. Our best exponents of evolution, including Professor Du Bois Reymond (*Ueber die Grenzen des Naturerkennens*, p. 25 sq.), fully recognize this difficulty. We have here much the same "mystery" which meets us in the conversion of a nerve-stimulus into a sensation in the developed organism. The sequence is unlike any properly physical succession, and so cannot be further explained by being brought under a more general law. Not only so, the doctrine of the conservation of energy, as applied to organic processes, leads to the conclusion that the genesis of mind in general and of every single mental phenomenon is, from a physical point of view, something non-essential.

We may, no doubt, avoid this difficulty, in appearance at least, by assuming that all material processes down to the vibrations of the indivisible atoms are accompanied with a mode of feeling. This may, of course, be proposed as a properly scientific hypothesis, and as involving no metaphysical assumptions respecting the nature of atoms. The great difficulty here would be, how we are to conceive of modes of sensibility that do not enter into a collective consciousness, and which appear to lack all the characteristics of our own conscious life.

Even, however, if this huge difficulty of the genesis of mind is got over, there still remain limits to the explanation effected by the doctrine of evolution. Thus, while it might be able to deduce all the processes of physical evolution from a few assumptions respecting primitive matter and its laws, it would have no such data for resolving all these steps in the mental process which result in a heterogeneous mode of feeling. How, for instance, is it to account on general principles, and by *a priori* reasoning, for the differentiation of a vague tactual sensibility into what we know as sight and hearing—sensibilities which underlie all our ordinary conceptions of the physical world? Here are manifestly set rigid limits to the explanation effected by the doctrine of evolution, the limits which J. S. Mill has laid down as those of all kinds of explanation of phenomena. The doctrine by no means helps us to resolve all laws of succession into one.

The other limits set to the explanatory power of the modern doctrine have already been hinted at. Thus the doctrine sets out from a given point in time, at which it assumes a definite arrangement of material (and mental) elements to have obtained. "Of the beginning of the universe," says Professor Clifford, "we know nothing at all." Again, Professor J. Clerk Maxwell tells us<sup>1</sup> that we must from the first assume an infinite number of molecules exactly alike in their weight and rate of vibration; and he distinctly argues against the supposition that this system of like elements can have been evolved. There is room then for the question, how this particular order of elements arose. And even if we go further back, and make with Mr Spencer the large assumption that these various classes of molecules have been evolved from perfectly homogeneous first elements, one may still ask for an explanation of this original homogeneity. In short, it is plain that every doctrine of evolution must assume some definite initial arrangement, which is supposed to contain the possibilities of the order which we find to be evolved, and no other possibility.

Such being the limits set to the scope of explanation by the idea of evolution, the question arises whether these apparently permanent gaps in our scientific knowledge can be filled up by extra-scientific speculations. One may seek to show the need of such a metaphysical interpretation of evolution by a reference to the very nature of the doctrine. As a scientific truth, it is simply the highest generalization respecting the order of phenomena in time, and as such makes no assumptions with regard to the ultimate nature of that matter, force, and mind, of which it speaks. What, it may be asked, are the realities corresponding to these terms, and how are we to conceive of their mutual relations? Each of the supposed deficiencies in the doctrine of evolution just referred to leads us back to those various metaphysical doctrines in which, as we have seen, the idea of evolution has usually clothed itself. In order to understand what Mr Martineau calls the whence as distinguished from the when, and to provide a substantial support for the

thread of phenomenal events, it would seem as if we must fall back on some ultimate philosophic assumption respecting the efficient principle in the process.

With respect to metaphysical dualism, it must be said that it leaves us pretty much where we were. The correlation of two distinct substances and their manifestations, in the way required by the doctrine of evolution (whether this correlation be universal or not), needs explanation as much as the correlation of the two sets of phenomena. On the other hand, materialism, spiritualism, and the so-called monism, have each their merits and their drawbacks as helps to the interpretation of evolution. If materialism recommends itself by assuming the fewest possible principles, it is exposed to the objection that it bids us conceive a reality which is wholly distinct from mind. Further, it fails to give any intelligible account of the rise and progress of mental activity. Again, spiritualism assists us in accounting for the genesis of mind, and for the appearance of intelligent order in the world. Yet it is questionable whether this doctrine, assuming as it does some form of unconscious mind (whether as world-soul or as elements of feeling), is not beset with as many difficulties as it resolves. Further, it may be doubted whether the spiritualistic idea, in its common pantheistic form, has yet succeeded in rendering intelligible the fixed mechanical order which marks all stages of evolution. Finally, it may be allowed that the monistic doctrine of one reality with two faces does in appearance lift us over the difficulties which beset the materialistic and the spiritualistic interpretation of evolution. Only is it in truth anything more than a verbal simplification, and does it not rather leave us confined in that dualism where science has to land us?

It would thus seem that the doctrine of evolution has by no means as yet received its final philosophic character. No one of the metaphysical doctrines which are at our command is so plainly and completely adapted to transform it into a final doctrine of existence, that it must of necessity be accepted at once and by all.

To this we must now add that to many minds this resort to a metaphysical principle as the support of the process of evolution will not be held to be necessary. A positivist, who thinks that our knowledge of the universe must for ever be limited to phenomena, is at perfect liberty to accept the doctrine of evolution and to regard it as an ultimate expression for the order of the world. Nay more, the empirical idealist—who may perhaps be defined as a positivist that has fully analysed his "phenomena"—can accept and give a meaning to the doctrine of evolution as formulating the order of sensations, actual and possible, of conscious minds. Mr Spencer somewhere says that, if idealism is true, evolution is a dream. Yet this assertion may be reasonably disputed. It may perhaps seem staggering to be told that evolution postulates vast periods of time in which there existed no mind to experience the sensations into which the world is on the idealistic hypothesis resolved. Yet this difficulty is only apparent, since past physical evolution stands for a projection, so to speak, of now existing minds, and for an order of sensations conceived as possible under other and imaginable circumstances.<sup>2</sup> To the empirical idealist physical evolution stands for an imagined order of perceptions in an indefinite number of minds, mental evolution for actual successions of feeling in many minds, and the transition from the one to the other means the succession of actual states of consciousness on possible or imagined states. The unity of the world-process arises from the ability of the individual mind, which now reflects

<sup>1</sup> *Discourse on Molecules*. See also the very interesting section on the "Nature and Origin of Molecules," which concludes the work on the *Theory of Heat*.

<sup>2</sup> It may be added that the hypothesis of the uniform correlation of the physical and the mental enables us to assign an element of actuality (mental life) to the remote periods here spoken of.

on these many successions, to gather them up by a series of acts of imagination into a collective ideal experience for itself.

Thus the doctrine of evolution seems to be susceptible of statement in terms of idealism as easily as in terms of realism. In truth, each mode of viewing the process is at once possible and beset with difficulties. The difficulty of giving an idealistic interpretation arises from the popular distinction of mind or perception and something beyond and independent of this. The difficulties of giving a realistic interpretation have in part been stated already in speaking of the different realistic interpretations (materialism and spiritualism). To these must be now added the fundamental obstacle to all realism, which shows itself, in a specially striking way, in relation to the doctrine of evolution,—namely, the difficulty of conceiving in terms of human consciousness something which is independent of, antecedent to, and creative of, this consciousness.

It may be asked, perhaps, whether the doctrine of evolution, by providing a new conception of the genesis of our cognitions, has anything to say to the question of a real independent object. What the doctrine effects with respect to such cognitions as those of space is to show that the bare fact of intuitiveness or innateness does not establish their non-empirical or transcendental origin. Similarly it may be held that the doctrine opens a way of accounting for the growth of the idea of independent realities, supposing this to be now an innate disposition of the mind—viz., by regarding this idea as arising in a succession of many generations, if not out of, yet by help of, certain elements or aspects of experience. It may, however, be maintained that the idea is not even suggested by experience; if so, it would follow from the evolution theory that its present persistence represents a permanent mental disposition to think in a particular way. Even then, however, the question would remain open whether the permanent disposition were an illusory or trustworthy tendency, and in deciding this point the doctrine of evolution appears to offer us no assistance.<sup>1</sup>

As a scientific doctrine, whatever its ultimate interpretation, evolution has a bearing on our practical, i.e., moral and religious ideas. This has already been shown in part by writers from whom we have quoted. Among other results, this doctrine may be said to give new form to the determinist theory of volition, and to establish the relativity of all moral ideas as connected with particular stages of social development. It cannot, as Mr Sidgwick has shown, provide a standard or end of conduct except to those who are already disposed to accept the law *sequi naturam* as the ultimate rule of life. To such it furnishes an end, though it would still remain to show how the end said to be unconsciously realized by nature, the well-being of individuals and of communities, is to be adjusted to the ends recognized in common-sense morality, including the happiness of all sentient beings. It may be added that the doctrine, by assigning so great an importance to the laws of inheritance as means of raising the degree of organization and life, may be expected to exert an influence on our ideas of the solidarity of the present generation and posterity, and to add a certain solemnity to all the duties of life, prudential morality included.

The bearing of the doctrine of evolution on religious ideas is not so easy to define. Mr Spencer considers the ideas of evolution and of a pre-existing mind incapable of being united in thought (see his rejoinder to Dr Martineau, *Contemporary Review*, vol. xx. p. 141 sq.). Yet, according to

<sup>1</sup> For a discussion of the relations of this doctrine to realism, see the essay already referred to in Mr Sally's volume *Sensation and Intuition*.

others, the idea is by no means incompatible with the notion of an original Creator, though it serves undoubtedly to remove the action of such a being further from our ken. At first sight it might appear that the doctrine as applied to the subjective world, by removing the broad distinction between the human and the animal mind, would discourage the hope of a future life for man's soul. Yet it may be found, after all, that it leaves the question very much where it was. It may perhaps be said that it favours the old disposition to attribute immortality to those lower forms of mind with which the human mind is found to be continuous. Yet there is nothing inconsistent in the supposition that a certain stage of mental development qualifies a mind for immortality, even though this stage has been reached by a very gradual process of development. And if, as might be shown, the modern doctrine of evolution is susceptible of being translated into terms of Leibnitz's hypothesis of indestructible monads, which include all grades of souls, then it is clearly not contradictory of the idea of immortality.

Very interesting is the bearing of the doctrine of evolution on that aesthetic-religious sentiment towards the world which has taken the place of older religious emotions in so many minds. First of all by destroying the old anthropocentric view of nature, according to which she is distinct from and subordinated to man, this doctrine favours that pantheistic sentiment which reposes on a sense of ultimate identity between ourselves and the external world. In a sense it may be said that the new doctrine helps to restore the ancient sentiment towards nature as our parent, the source of our life. It is well to add, however, that the theory of evolution, by regarding man as the last and highest product of nature, easily lends support to the idea that all things exist and have existed for the sake of our race. This seems, indeed, to be an essential element in any conception we can form of a rationally evolved universe.

A reference must be made, in closing this article, to the optimistic aspect of the doctrine of evolution. That there is a tone of optimism in much of the more popular exposition of the doctrine of evolution needs not be proved. There is no doubt, too, that both in Mr Darwin's and Mr Spencer's theories there are ideas which tend to support a cheerful and contented view of things. The idea of the survival of the fittest, and of evolution as a gradual process of adaptation to environment, lend themselves to this kind of thought. Indeed, Du Bois Reymond, in the lecture on Leibnitz already referred to, seriously argues that the doctrine of evolution provides a scientific equivalent to that philosopher's remarkable conception of the best of all possible worlds. On the other hand, as the present writer has elsewhere shown, Mr Darwin's doctrine of evolution contains elements which are fitted to tone down our estimate of the value of the world viewed as the seat of conscious sentient life. The pain involved in the renewed struggle for existence is a large drawback from the gains of human progress and of organic development as a whole. More than this, the principle of natural selection appears almost to favour a pessimist view of the world, in so far as it implies the tendency of organic forms to multiply down to the limits of bare existence.

Principal works used in the historical sketch:—F. Ueberweg, *History of Philosophy*; J. E. Erdmann, *Grundriss der Geschichte der Philosophie*; G. H. Lewes, *History of Philosophy*; C. A. Brandis, *Handbuch der Geschichte der griechisch-römischen Philosophie*; E. Zeller, *Die Philosophie der Griechen*; G. Grote, *Plato and Aristotle*; W. Kaulich, *Geschichte der scholastischen Philosophie*; A. Stöckl, *Geschichte der Philosophie des Mittelalters*; Kuno Fischer, *Geschichte der neuern Philosophie*; J. P. Damiron, *Mémoires pour servir à l'histoire de la Philosophie au 18<sup>e</sup> Siècle*; E. Zeller, *Geschichte der deutschen Philosophie*. (J. S.)

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EVORA, a city of Portugal, capital of the province of Alentejo, is situated on an eminence in the centre of a fertile plain, 85 miles E. by S. of Lisbon. It is surrounded by ramparts flanked with towers, and has two forts, but all in a ruinous condition, and quite useless as means of defence. The streets are narrow, crooked, and filthy, and the houses old and ill-built. The cathedral is a magnificent Gothic edifice with an altar in the Italian style, extremely rich, and decorated with variously coloured marbles. Evora is the see of an archbishop, and besides the cathedral has several churches, convents, and hospitals, a house of charity, barracks, a diocesan school, and a museum. A university, founded in 1550, was abolished on the expulsion of the Jesuits in the 18th century. An ancient aqueduct and an ancient tower, till a few years ago in pretty good preservation, have been partly demolished to make room for a market. They were long believed to have been of Roman origin, but are now known to have been constructed about 1540 in the reign of Don John III., at the instance of an antiquarian named Resende. The aqueduct was constructed on the site of the old Roman one. The remains of what is said to have been a temple of Diana still exist, but the place is now used as a slaughter-house. Evora, under the name of Eborac, was an important military station in the time of the Romans, and was called *Liberaltas Julia* on account of certain municipal privileges bestowed on it by Cæsar. In 712 it was conquered by the Moors and named Jabura, but they were deprived of it in 1162 by an order of Christian knights.

EVREUX (the ancient *Mediolanum*, and afterwards *Ebrovices*), a town of France, capital of the department of Eure, is situated on the Iton, an affluent of the Eure, 67 miles W.N.W. of Paris by railway. The town is generally well built, and still contains many antique timber-framed houses. It is the seat of a bishop, and its cathedral is one of the most ancient and curious in France. It dates from the 11th century, and is a very imposing cruciform structure, though not uniform in style. The north transept and the portal are in the flamboyant Gothic, elaborately ornamented; the west front is in the Italian style. The beautiful rose window in the south transept, and the

wooden screens of the side chapels round the choir, showing the flamboyant Gothic style modified by the reviving Italian, also merit notice. The lady chapel is of elegant architecture, with painted glass equally remarkable for its fine execution and perfect preservation. At the intersection of the nave and transepts rises an octagonal tower supported on four pillars, and surmounted by a pyramidal spire of open stonework. The church of St Taurin also displays various styles of architecture, and contains the shrine of St Taurin, a work of the 13th century. The episcopal palace, which dates from the 15th century, is a beautiful structure. Among the other objects of interest are the clock-tower built in the 15th century, the abbey of St Saviour, the ancient Séminaire des Eudistes now used as a prison and assize buildings, the museum of antiquities, the town-hall, the prefect's residence, the theatre, the public library, the botanic garden, and the promenades. Evreux is famed for its manufacture of tools, and for stocking making; brewing, distilling, dyeing, tanning, and papermaking are its other principal industries. At Vieil Evreux the remains of a Roman theatre, a palace, baths, and an aqueduct have been discovered, and various relics which are now deposited in the Musée d'Antiquités.

Evreux existed at a very early period. About the end of the 10th century Richard I. of Normandy gave it to his son Robert; and early in the 12th century it came by inheritance into the house of Montfort, from whom it was bought by Philip Augustus of France. Philip II. gave it to his brother Prince Louis, who in 1316 was created Count of Evreux. Count Philip of Evreux acquired by marriage the kingdom of Navarre, and Charles III. of Navarre sold it to Charles VI. of France. Charles VII. gave it in 1426 to John Stuart, earl of Darnley, after whose death it again came into the possession of the crown. Charles IX. bestowed it, along with the title, on his brother the duke of Alençon, but on his death in 1584, it finally returned into the possession of the crown.

EWALD, HEINRICH GEORG AUGUST VON (1803-1875), Orientalist, biblielist, and theologian, was born, November 16, 1803, at Göttingen, where his father followed the occupation of a linen-weaver. After receiving the usual preliminary training, he entered the university of his native town in 1820; and there, with Eichhorn as teacher, he at once began to devote himself specially to the study of Hebrew and its cognates. At the close of his academic career in 1823 he was appointed to a mastership in the