

capability of natural development (which already involves a teleological idea) Kant distinguishes the power of moral self-development or self-liberation from the dominion of nature, the gradual realization of which constitutes human history or progress. This moral development is regarded as a gradual approach to that rational, social, and political state in which will be realized the greatest possible quantity of liberty. Thus Kant, though he appropriated and gave new form to the idea of human progress, conceived of this as wholly distinct from a natural (mechanical) process. In this particular, as in his view of organic actions, Kant distinctly opposed the idea of evolution as one universal process swaying alike the physical and the moral world.

Schelling.—In the earlier writings of Schelling, containing the philosophy of identity, existence is represented as a becoming, or process of evolution. Nature and mind (which are the two sides, or polar directions, of the one absolute) are each viewed as an activity advancing by an uninterrupted succession of stages. The side of this process which Schelling worked out most completely is the negative side, that is, nature. Nature is essentially a process of organic self-evolution. It can only be understood by subordinating the mechanical conception to the vital, by conceiving the world as one organism animated by a spiritual principle or intelligence (*Weltseele*). From this point of view the processes of nature from the inorganic up to the most complex of the organic become stages in the self-realization of nature. All organic forms are at bottom but one organization, and the inorganic world shows the same formative activity in various degrees or potencies. Schelling conceives of the gradual self-evolution of nature in a succession of higher and higher forms as brought about by a limitation of her infinite productivity, showing itself in a series of points of arrest. The detailed exhibition of the organizing activity of nature in the several processes of the organic and inorganic world rests on a number of fanciful and unscientific ideas. Schelling's theory is a bold attempt to revitalize nature in the light of growing physical and physiological science, and by so doing to comprehend the unity of the world under the idea of one principle of organic development. His highly figurative language might leave us in doubt how far he conceived the higher stages of this evolution of nature as following the lower in time. In the introduction to his work *Von der Weltseele*, however, he argues in favour of the possibility of a transmutation of species in periods incommensurable with ours. The evolution of mind (the positive pole) proceeds by way of three stages,—theoretic, practical, and æsthetic activity. Schelling's later theosophic speculations do not specially concern us here.

Followers of Schelling.—Of the followers of Schelling a word or two must be said. Heinrich Steffens, in his *Anthropologie*, seeks to trace out the origin and history of man in connexion with a general theory of the development of the earth, and this again as related to the formation of the solar system. All these processes are regarded as a series of manifestations of a vital principle in higher and higher forms. Oken, again, who carries Schelling's ideas into the region of biological science, seeks to reconstruct the gradual evolution of the material world out of original matter, which is the first immediate appearance of God, or the absolute. This process is an upward one, through the formation of the solar system and of our earth with its inorganic bodies, up to the production of man. The process is essentially, a polar linear action, or differentiation from a common centre. By means of this process the bodies of the solar system separate themselves, and the order of cosmic evolution is repeated in that of terrestrial evolution. The organic world (like the world as a whole) arises out of a primitive chaos, namely, the

infusorial slime. A somewhat similar working out of Schelling's idea is to be found in Oersted's work entitled *The Soul in Nature* (Eng. trans.). Of later works based on Schelling's doctrine of evolution mention may be made of the volume entitled *Natur und Idee*, by G. F. Carus. According to this writer, existence is nothing but a becoming, and matter is simply the momentary product of the process of becoming, while force is this process constantly revealing itself in these products.

Hegel.—Like Schelling, Hegel conceives the problem of existence as one of becoming. He differs from him with respect to the ultimate motive of that process of gradual evolution which reveals itself alike in nature and in mind. With Hegel the absolute is itself a dialectic process which contains within itself a principle of progress from difference to difference and from unity to unity. "This process (Mr Wallace remarks) knows nothing of the distinctions between past and future, because it implies an eternal present." This conception of an immanent spontaneous evolution is applied alike both to nature and to mind and history. Nature to Hegel is the idea in the form of heterogeneity; and finding itself here it has to remove this exteriority in a progressive evolution towards an existence for itself in life and mind. Nature (says Zeller) is to Hegel a system of gradations, of which one arises necessarily out of the other, and is the proximate truth of that out of which it results. There are three stadia, or moments, in this process of nature—(1) the mechanical moment, or matter devoid of individuality; (2) the physical moment, or matter which has particularized itself in bodies—the solar system; and (3) the organic moment, or organic beings, beginning with the geological organism—or the mineral kingdom, plants, and animals. Yet this process of development is not to be conceived as if one stage is naturally produced out of the other, and not even as if the one followed the other in time. Only spirit has a history; in nature all forms are contemporaneous.¹ Hegel's interpretation of mind and history as a process of evolution has more scientific interest than his conception of nature. His theory of the development of free-will (the objective spirit), which takes its start from Kant's conception of history, with its three stages of legal right, morality as determined by motive and instinctive goodness (*Sittlichkeit*), might almost as well be expressed in terms of a thoroughly naturalistic doctrine of human development. So, too, some of his conceptions respecting the development of art and religion (the absolute spirit) lend themselves to a similar interpretation. Yet while, in its application to history, Hegel's theory of evolution has points of resemblance with those doctrines which seek to explain the world-process as one unbroken progress occurring in time, it constitutes on the whole a theory apart and *sui generis*. It does not conceive of the organic as succeeding on the inorganic, or of conscious life as conditioned in time by lower forms. In this respect it resembles Leibnitz's idea of the world as a development; the idea of evolution is in each case a metaphysical as distinguished from a scientific one.² Hegel gives a place in his metaphysical system to the mechanical and the teleological views; yet in his treatment of the world as an evolution the idea of end or purpose is the predominant one.

Of the followers of Hegel who have worked out his

¹ Hegel somewhere says that the question of the eternal duration of the world is unanswerable: time as well as space can be predicated of finitudes only.

² Mr Wallace (*Logic of Hegel*, Proleg. pp. 48, 49) speaks of Hegel's system of evolution as having been in a sense the transformation into a philosophic shape of the biological doctrine of evolution as suggested by Treviranus and Lamarck. Yet this relation is by no means obvious.

peculiar idea of evolution it is hardly necessary to speak. A bare reference may be made to Rosenkranz, who in his work *Hegel's Naturphilosophie*, seeks to develop Hegel's idea of an earth-organism in the light of recent science, recognizing in crystallization the morphological element.

Schopenhauer.—Of the other German philosophers immediately following Kant, there is only one who calls for notice here, namely, Arthur Schopenhauer. This writer, by his conception of the world as will which objectifies itself in a series of gradations from the lowest manifestations of matter up to conscious man, gives a slightly new shape to the evolutionary view of Schelling, though he deprives this view of its optimistic character by denying any co-operation of intelligence in the world-process. In truth, Schopenhauer's conception of the world as the activity of a blind force is at bottom a materialistic and mechanical rather than a spiritualistic and teleological theory. Moreover, Schopenhauer's subjective idealism, and his view of time as something illusory, hindered him from viewing this process as a sequence of events in time. Thus he ascribes eternity of existence to species under the form of the "Platonic ideas." As Ludwig Noiré observes,¹ Schopenhauer has no feeling for the problem of the origin of organic beings. He says Lamarck's original animal is something metaphysical, not physical, namely, the will to live. "Every species (according to Schopenhauer) has of its own will, and according to the circumstances under which it would live, determined its form and organization,—yet not as something physical in time, but as something metaphysical out of time."

Von Baer.—Before leaving the German speculation of the first half of the century, a word must be said of Von Baer, who not only reached those ideas of individual and serial development which are at the basis of the modern doctrine of organic evolution, but who recognized in the law of this development the law of the universe as a whole. In his *Entwicklungsgeschichte der Thiere* (p. 264) he distinctly tells us that the law of growing individuality is "the fundamental thought which goes through all forms and degrees of animal development and all single relations. It is the same thought which collected in the cosmic space the divided masses into spheres, and combined these to solar systems; the same which caused the weather-beaten dust on the surface of our metallic planet to spring forth into living forms." Von Baer thus prepared the way for Mr Spencer's generalization of the law of organic evolution as the law of all evolution.

Early Half of the Century—English Writers.—We may here conveniently break off our review of German evolutionists, returning to the writers of the latter part of the century presently. The thinkers outside Germany who in the first half of the century contributed elements to the growth of the idea of evolution are too unimportant to detain us here. In the English philosophy of this period questions of cosmology play a very inconsiderable part. The development of the analytical psychology, especially by the two Mills, may be referred to. Also an allusion may be made to the discussions respecting the nature of cause. Among these Sir W. Hamilton's definition of cause (*Lectures on Metaphysics*, ii. 377) is specially interesting as appearing to tell against the production of mind out of matter.

French Writers—Comte.—In France during this period the name of Auguste Comte is the only one that need arrest our attention. Comte's principles of positivism, which restricted all inquiry to phenomena and their laws, are said by his recent disciples to exclude all consideration of the ultimate origin of the universe, as well as of organic life.

¹ *Der monistische Gedanke*, p. 238 sq.

Yet though Comte did not contribute to a theory of cosmic organic evolution, he helped to lay the foundations of a scientific conception of human history as a natural process of development determined by general laws of human nature together with the accumulating influences of the past. Comte does not recognize that this process is aided by any increase of innate capacity; on the contrary, progress is to him the unfolding of fundamental faculties of human nature which always pre-existed in a latent condition; yet he may perhaps be said to have prepared the way for the new conception of human progress by his inclusion of mental laws under biology.

Italian Writers.—In Italy during this period there meet us one or two thinkers who concern themselves with the interpretation of the world-process. Ant. Rosmini follows Campanella in endowing chemical atoms with sensibility and life, and he bases the hierarchy of beings in the universe on the different degrees of this sensibility. At the same time he follows Bruno in speaking of the totality of the world as an organism endowed with a soul which individualizes itself in the innumerable existences of the universe. Spontaneous generation is to Rosmini a necessary consequence of his theory of a universal life. Other Italian writers adopt Hegel's notion of the world as a self-evolution of the idea. Of these it is enough to mention Terensio Mamiani, who gives an optimistic turn to his conception of evolution by viewing it as a progressive union of the finite with the infinite. Mamiani argues against Darwin, and holds that all specific forms are fixed for all time.

Modern Doctrine of Evolution.—We now approach the period in which the modern doctrine of evolution in its narrow sense has originated. This doctrine is essentially a product of scientific research and speculation. It is a necessary outcome of the rapid advance of the physical sciences. Its final philosophic form cannot yet be said to be fixed. It may be defined as a natural history of the cosmos including organic beings, expressed in physical terms as a mechanical process. In this record the cosmic system appears as a natural product of elementary matter and its laws. The various grades of life on our planet are the natural consequences of certain physical processes involved in the gradual transformations of the earth. Conscious life is viewed as conditioned by physical (organic and more especially nervous) processes, and as evolving itself in close correlation with organic evolution. Finally, human development, as exhibited in historical and prehistorical records, is regarded as the highest and most complex result of organic and physical evolution. This modern doctrine of evolution is but an expansion and completion of those physical theories which opened the history of speculation. It differs from them in being grounded on exact and verified research. As such, moreover, it is a much more limited theory of evolution than the ancient. It does not concern itself (as yet at least) about the question of the infinitude of worlds in space and in time. It is content to explain the origin and course of development of the world, the solar or, at most, the sidereal system which falls under our own observation. It would be difficult to say what branches of science had done most towards the establishment of this doctrine. We must content ourselves by referring to the progress of physical (including chemical) theory, which has led to the great generalization of the conservation of energy; to the discovery of the fundamental chemical identity of the matter of our planet and of other celestial bodies, and of the chemical relations of organic and inorganic bodies; to the advance of astronomical speculation respecting the origin of the solar system, &c.; to the growth of the new science of geology which has necessitated the conception of vast and unimaginable periods of time in the past history of our globe, and to the rapid march of

the biological sciences which has made us familiar with the simplest types and elements of organism; finally, to the recent development of the science of anthropology (including comparative psychology, philology, &c.), and to the vast extension and improvement of all branches of historical study.

English Writers—Darwin.—The honour of working out this theory of evolution on a substantial basis of fact belongs to England. Of the writers who have achieved this result Mr Darwin deserves the first notice. Though modestly confining himself to the problem of accounting for the evolution of the higher organic forms out of the lower, Mr Darwin has done much to further the idea of a gradual evolution of the physical world. The philosophic significance of the hypothesis of natural selection, especially associated with Mr Darwin, is due, as Professor Helmholtz points out, to the fact that it introduces a strictly mechanical conception in order to account for those intricate arrangements known as organic adaptations which had before been conceived only in a teleological manner. By viewing adaptations as conditions of self-preservation, Mr Darwin is able to explain how it is that the seemingly purposeful abounds in organic nature. In so doing he has done much to eliminate the teleological method from biology. It is true that, in his conception of seemingly spontaneous variations and of correlations of growth, he leaves room for the old manner of viewing organic development as controlled by some internal organizing principle. Yet his theory, as a whole, is clearly a heavy blow to the teleological method. Again, Mr Darwin has greatly extended the scope of mechanical interpretation, by making intelligible, apart from the co-operation of intelligent purpose, the genesis of the organic world as a harmonious system of distinct groups, a unity in variety, having certain well-marked typical affinities. How greatly this arrangement has helped to support the idea of an ideal plan, we have had occasion to observe. Mr Darwin in his doctrine of the organic world as a survival refers this appearance of systematic plan to perfectly natural causes, and in so doing he gives new meaning to the ancient theory that the harmony of the world arises out of discord. Once more, Mr Darwin's hypothesis is of wide philosophic interest, since it helps to support the idea of a perfect gradation in the progress of things. The variations which he postulates are slight, if not infinitesimal, and only effect a sensible functional or morphological change after they have been frequently repeated and accumulated by heredity.

Mr Darwin's later work, in which he applies his theory of the origin of species to man, is a valuable contribution to a naturalistic conception of human development. The mind of man in its lowest stages of development is here brought into close juxtaposition to the animal mind, and the upward progress of man is viewed as effected by natural causes, chief among which is the action of natural selection. Mr Darwin does not inquire into the exact way in which the mental and the bodily are connected. He simply assumes that, just as the bodily organism is capable of varying in an indefinite number of ways, so may the mental faculties vary indefinitely in correspondence with certain physical changes. In this way he seeks to account for all the higher mental powers, as the use of language and reason, the sentiment of beauty, and conscience.

Finally, Mr Darwin seeks to give a practical and ethical turn to his doctrine. He appears to make the end of evolution the conscious end of man's action, since he defines the general good as "the rearing of the greatest number of individuals in full health and vigour, and with all their faculties perfect under the conditions to which they are subject." Further, in his view of the future of the race, Mr Darwin leans to the idea that the natural process

which has effected man's first progress must continue to be an important factor in evolution, and that, consequently, it is not well to check the scope of this process by undue restraints of population, and a charitable preservation of the incompetent.

A. R. Wallace.—Mr A. R. Wallace, who shares with Mr Darwin the honour of establishing the doctrine of natural selection, differs from the latter in setting much narrower limits to the action of this cause in the mental as well as the physical domain. Thus he would mark off the human faculty of making abstractions, such as space and time, as powers which could not have been evolved in this way. Mr Wallace leans to the teleological idea of some superior principle which has guided man in his upward path, as well as controlled the whole process of organic evolution. This law is connected with the absolute origin of life and organization.

Herbert Spencer.—The thinker who has done more than any one else to elaborate a consistent philosophy of evolution on a scientific basis is Mr Herbert Spencer. First of all he seeks to give greater precision to the conception of this universal process. Evolution is a change from the homogeneous to the heterogeneous, from the indefinite or undetermined to the definite or determined, from the incoherent to the coherent. Again, Mr Spencer seeks to show that the causes of evolution are involved in the ultimate laws of matter, force, and motion, among which he gives great prominence to the modern doctrine of the conservation of energy. Thus the rationale of the process shapes itself to Mr Spencer as a distinctly mechanical problem. He sets out with the assumption of a limited mass of homogeneous matter acted upon by incident forces, and seeks to show how, by help of two laws,—namely, the instability of the homogeneous, and the multiplication of the effects of any such incident force,—the process known as evolution is brought about. This process is illustrated in the genesis of the solar system, for the explanation of which Mr Spencer makes use of the nebular hypothesis, in the formation of our planet, as well as the development of organic and mental life. Mr Spencer does not, however, conceive of this process of evolution as unlimited in time. As in the development of the individual organism, so in that of organic beings as a whole, of the earth, and of the solar system, there is a conflict between the forces of which the action is integrating or consolidating and those of which the action is disintegrating. The process of evolution always tends to an equilibration between these conflicting forces and ultimately to a dissolution of the products of evolution. Thus the solar system is a moving equilibrium which is destined to be finally dissipated into the attenuated matter out of which it arose. Mr Spencer thus approaches the earliest theories of cosmic evolution when he tells us (*First Principles*, p. 482) that vast periods in which the forces of attraction prevail over those of repulsion, alternate with other vast periods in which the reverse relation holds. The mechanical theory of evolution thus laid down in the *First Principles* is applied in Mr Spencer's later works to the explanation of organic, mental, and social evolution. The full explanation of the processes of inorganic evolution finds no place in the writer's system. Mr Spencer seeks, in the *Principles of Biology*, to conceive of organic bodies and their actions in mechanical terms. Life is regarded as essentially a correspondence of internal actions in the organism to external actions proceeding from the environment, and the object of Mr Spencer's volumes is to explain on mechanical principles the growth of this correspond-

¹ The writer suggests that the whole sidereal system may be the result of a similar process.

ence from the lowest to the highest. He excludes all consideration of the question how life first arose, though it is clear that he regards the lowest forms of life as continuous in their essential nature with sub-vital processes. It is in the later volumes, dealing with mental and social evolution, that Mr Spencer's exposition becomes most interesting to the student of philosophy. In the *Principles of Psychology*, he seeks to deal with mind as an aspect or correlate of life which begins to manifest itself when the process of adjustment to environment, in which all life consists, reaches a certain degree of complexity. Mr Spencer indulges in no hypothesis respecting the universal co-existence of sentience with matter and force. He thinks we must accept the distinctions which common-sense has established, and so limit feeling or consciousness to organic beings endowed with a nervous system. Thus, just as he does not seek to explain the first appearance of life as a whole, so he does not seek to explain the first dawn of mental life. Mr Spencer's unit of consciousness is the blurred undetermined feeling which answers to a single nervous pulsation or shock. Assuming this he seeks to trace the gradual evolution of consciousness. Sensations arise by a number of rapid successions of such elementary feelings variously combined, and all more composite states of mind arise by a similar process of combination of these feelings. Thus mental evolution is a progressive composition of units of feeling in more and more complex forms, and united by more complex relations. Mr Spencer's conception of mind thus excludes all fundamental distinctions of faculty. Instinct, memory, reason, the emotions and volitions, alike develop themselves in divergent directions out of a common elementary process. They are, moreover, all related to one and the same biological process, being incidental accompaniments of the actions by which the organism responds and adjusts itself to the forces of its environment. According as these actions are more complex, and consequently less immediate, the mental actions which accompany them vary in character from reflex action up to deliberate volition, from the most simple presentative feeling or sensation up to the most complex representative and re-representative feeling or emotion. It would be impossible to point to all the applications which Mr Spencer has made of his principle of evolution to the questions of psychology. We may just mention among other points of interest his attempt to explain the innate intuitions of space, moral right, &c., as mental dispositions handed down from progenitors and embodying the uniform experience of many generations, his ingenious endeavour to account for the coincidence between pleasures and pains and actions beneficial and injurious to the organism, and his conception of the aesthetic interest as a growth out of the play-impulse, which is the tendency of activities that have become developed beyond the immediate needs of existence to vent themselves.

Mr Spencer's elaboration of the subject of social evolution has not been carried far enough for us to understand the full bearing of his ideas. Yet the fundamental conceptions are given us. The writer regards society, after the analogy of an individual organism, as possessing a number of various structures or organs and functions, and as tending to evolve itself by a series of adjustments to its environment, physical and social. All ideas and institutions display this process of evolution no less than societies as wholes. History is to our author essentially the record of this social evolution. It is to be observed that Mr Spencer attributes to society a certain spontaneous tendency to evolution apart from natural selection. He looks on progress as a gradual process of self-adaptation of man to the conditions of his environment, and anticipates an age when this adjustment will be com-

plete and human happiness perfect. In this respect Mr Spencer's conception of man's history and destiny wears an optimistic tinge when compared with that very vaguely shadowed forth by Mr Darwin.

To Mr Spencer, as to Mr Darwin, the doctrine of evolution seems to supply the end of conduct. He conceives of morality as essentially an observance of the laws of life, the individual and the collective. At the same time, since Mr Spencer regards the moral sense as a growth out of feelings of pleasure and pain (racial experiences), closely identifies the ends of life and happiness, and distinctly teaches that social evolution or progress makes for an increase of happiness, his ethical doctrine does not materially differ from that of utilitarianism.

So far we have said nothing respecting the metaphysical basis which Mr Spencer seeks to give to his doctrine of evolution. It is generally agreed that this does not really belong to his doctrine of evolution itself. Mr Spencer is a thorough-going realist. From his general scheme of evolution one would be prepared to find him avowing himself a materialist. Yet he seeks to avoid this conclusion by saying that it is one unknowable reality which manifests itself alike in the material and in the mental domain. At the same time, this unknowable is commonly spoken of as force, and in many places seems to be identified with material force. Mr Spencer makes little use of his metaphysical conception in accounting for the evolution of things. He tells us neither why the unknowable should manifest itself in time at all, nor why it should appear as a material world before it appears under the form of mind or consciousness. Indeed Mr Spencer's doctrine of evolution cannot be said to have received from its author an adequate metaphysical interpretation. The idea of the unknowable hardly suffices to give to his system an intelligible monistic basis. In truth, this system seems in its essence to be dualistic rather than monistic.

Metaphysical Interpretation—Professor Clifford.—Of the very few who have dealt with the metaphysical interpretation of the scientific doctrine of evolution, Professor Clifford deserves special notice. In an essay entitled "On things in themselves," published in *Mind* (No. ix.), as well as in other and earlier papers, Mr Clifford, starting from the basis of empirical idealism which asserts that material objects are nothing but states of consciousness, argues that the reality answering to them is in all cases something mental. Thus all existence—including what we call minds as well as bodies—consists in aggregates of elementary "mind stuff," the elements themselves corresponding to Mr Spencer's units of feeling. The writer expressly argues that his idea of a continuity of mental existence throughout the physical (phenomenal) world is the direct consequence of the doctrine of evolution. This theory is curious as providing a monistic and quasi-spiritualistic conception of evolution, which is at the same time a mechanical one.

Problems of Organic Evolution.—G. H. Lewes.—Among the writers who have worked on the lines laid down by our two great evolutionists, a high place must be given to Mr G. H. Lewes, who in his biological and psychological writings, and more especially the *Problems of Life and Mind*, adopts a view of the relations of mind and life or organization closely resembling in its essentials that of Mr Spencer. To Mr Lewes consciousness is but a more complex form of mental life which is correlated with the actions of all the nervous centres, its lowest form being sentience. He appears to look on mind in all its grades as but the other side or face of the bodily processes which it accompanies. Yet he has not so far made use of this monistic conception in explaining the gradual evolution of conscious mental life. Indeed, though Mr Lewes's writings are pervaded with the idea of organic evolution, his dis-

cussion of the nature and laws of organism in his last volume, *The Physical Basis of Mind*, might seem ever and again, by its sharp separation of organic and inorganic (mechanical) processes, to tell against the supposition of an evolution of life out of inorganic matter.

J. J. Murphy.—The question of the genesis of life and mind receives a peculiar treatment in Mr J. J. Murphy's *Habit and Intelligence*. In this work the teachings of the evolutionists are largely accepted, while an attempt is made to reconcile these with a teleological view of nature. The process of inorganic and of organic nature is each recognized as one of evolution; but while the former is viewed as the result of mechanical principles, the latter is said to imply an intelligent or formative principle as well. Mechanical principles do indeed operate in organisms, this is the region of habit; but over and above this, vital processes involve a controlling intelligence. The author adopts the hypothesis that the Creator endowed vitalized matter at the first with intelligence under the guidance of which it organizes itself. Evolution is largely the result of this vital intelligent principle, only a small part being attributable to mechanical causes, such as natural selection.

Evolution and Psychology.—The speculations of Mr Darwin and Mr Spencer have had a powerful influence on recent English psychology, which promises to become comparative, not only in the sense of including a comparison of ethnological mental characteristics, but also in the wider sense of bringing human intelligence into relation to that of the lower animals. Among writers who have laboured in this construction of a theory of mental evolution, mention must be made of the late Mr D. Spalding.¹ Again, Mr Chauncey Wright, in his remarkable essay *The Evolution of Self-Consciousness* (printed in a collection of his works), made a brilliant attempt to represent man's highest mental operations as evolved out of simple processes common to man and the lower animals. The influence of evolutionary ideas is further traceable in the latest work of Mr A. Bain (*Emotions and Will*, 3d edition), and in the works of Dr Maudsley and other living psychologists. The relation of the doctrine of evolution to psychology is handled in an essay by Mr J. Sully (*Sensation and Intuition*, ch. i.).

Anthropology.—The application of the doctrine of evolution to the question of man's origin and development has engaged the attention of a number of writers. In a sense all recent anthropologists and historians of culture may be said to have worked in this direction. Special attention must, however, be called to those writers who have sought directly to apply the fundamental ideas of evolution to these problems. Mr Bagehot's *Physics and Politics* is remarkable as illustrating the employment of the doctrine of natural selection in order to explain certain aspects of political progress. Still more important is the contribution made by Mr Fiske, in his *Cosmic Philosophy*, to the theory of man's origin and development. Mr Fiske's work is a full exposition of Mr Spencer's doctrine of evolution. In addition to this it contains interesting speculations respecting the steps by which man's distinguishing intelligence and sociality were first acquired and afterwards developed.

Relation to Ethics.—The application of the doctrine of evolution to our ethical and religious ideas has engaged a number of writers. In Mr A. Barratt's *Physical Ethics* the development of man's moral sense out of feelings of pleasure and pain is traced in connexion with his organic and social evolution on which it is said to depend. By conceiving of all matter as endowed with sensibility

¹ See an essay on "Instinct" in *Macmillan's Magazine*, vol. xxvii. p. 282 sq.

(pleasure and pain), Mr Barratt is able to connect man's moral evolution with the whole process of organic and of cosmic evolution. The idea of a natural growth of the moral sense out of simpler impulses and instincts may also be frequently found in contemporary English literature. On the other hand, this consequence of the evolution theory has been strenuously opposed in the interests of a thorough-going intuitive ethics as, for example, by Mr St George Mivart, in his work, *The Genesis of Species*, and by Mr R. H. Hutton.²

Again the question has been discussed whether the doctrine of evolution contributes towards the determination of the end or standard of morals. Mr Sidgwick has shown that it cannot well do this merely by proving how the moral sense has arisen. It is easy, however, to look upon the natural process as a tendency towards an end, and to conceive of our conscious actions as being bound by this tendency, so that the highest end of our existence must be to co-operate with the natural forces. This idea pervades a good deal of contemporary literature. It appears with special distinctness in the writings of Professor Clifford³ and Mr F. Pollock⁴ and in the able work of Miss Simcox on *Natural Law*. On the other hand, Mr H. Sidgwick⁵ has made an elaborate study of the bearings of evolution on the ethical end, and reduces these to insignificant proportions. This writer criticises Mr Darwin's definition of the general good, and argues that the idea of a mere quantity of life is inadequate to supply a definite end of conduct. Nevertheless life ($\zeta\eta\upsilon$) is the prime condition of wellbeing ($\epsilon\delta\zeta\eta\upsilon$), and so far the evolutionist is right in making life a secondary aim. The differentia of wellbeing, however, requires further interpretation, which can only be supplied by the utilitarian principle. At the same time the doctrine of evolution guides us in the pursuit of this ultimate end, in so far as increase of happiness accompanies organic progress, or elevation in the scale of existence. Mr Sidgwick further points out how little the doctrine of evolution assists the utilitarian in dealing with social and political problems.

Relation to Religion.—The bearing of the doctrine of evolution on religion has formed the theme of a host of minor writings. On the whole, Mr Darwin's doctrine has been said (as it is by the author himself), not only to be compatible with the idea of an original creation of the world, but to supply a higher conception of the divine attributes than the hypothesis of special creations; on the other hand, Mr Spencer's doctrine, distinctly excluding as it does the idea of creative activity, has called forth strong opposition from a number of theological writers, among whom the most powerful is certainly Professor Martineau.⁶ In connexion with the subject of the relation of the evolution doctrine to religious ideas, it is worthy of remark that this doctrine appears to be serving as the starting-point for a new quasi-religious conception of nature. The idea of the cosmos and its forces as the author and source of our being easily lends itself to a kind of pantheistic sentiment towards nature. In Mr Spencer's own writings it is the

² See *Essays*, vol. i. essay 3, "Science and Theism," in which it is said that "the Darwinian theory is quite incapable of explaining the specifically human phenomenon of the rise of what may be called an anti-Darwinian conscience, which restrains and subordinates the principle of competition."

³ See especially an article entitled "Right and Wrong," in the *Fortnightly Review*, vol. xviii. new series, p. 794 sq.

⁴ See an article on "Evolution and Ethics," in *Mind*, No. 3.

⁵ See an article headed "The Theory of Evolution in its relation to Practice," in *Mind*, No. 1; cf. *Methods of Ethics*, 2nd edition, pp. 69, 70 et passim.

⁶ See the pamphlet *Modern Materialism*, in which Professor Tyndall's version of evolution is severely criticised; also an article "The Place of Mind in Nature and Intuition in Man," *Contemp. Rev.*, vol. xix. p. 606 sq.

unknowable force ever sustaining the evolving worlds which is said to excite this emotion. In the work of Miss Simcox already referred to, and the occasional papers of Professor Clifford,¹ it is rather visible nature itself which is thus elevated into a religious object.

Recent French Writers.—The French thought of the latter part of the century offers us but little in the way of a discussion of the problems with which evolution has to do. The activity of biological speculation appears to have influenced but a few philosophic minds. Naturalists have of course discussed the doctrine of evolution, and one of these, E. Quinet, in his work *La Creation*, seeks to apply Mr Darwin's theory to problems of art and morality. Thus the ideal of art should, he thinks, be based on the doctrine of evolution, and be "the presentment of superior forms which slumber still in the bosom of actual things," or the embodiment of "the possible development of the human type in the progress of nature and man." So the ideas of duty and virtue are to be based on this doctrine. Man is the only animal which can retrograde, and evil is retrogression in the path laid down by nature. It is an anachronism, or a revolt of man against himself. Among philosophic writers proper, the first place must be given to M. Th. Ribot, who, in his sympathetic exposition of Mr Spencer's doctrine of evolution in his *Recent English Psychology*, and in his interesting psychological study *On Heredity*, shows himself to be deeply pervaded with the new ideas, more especially in their bearing on mental phenomena. M. Ribot regards mental evolution as depending on material, but adds that the recognition of this connexion between the two domains of phenomena is compatible with idealism no less than with materialism. He would eliminate the conception of progress as a subjective one, and says that the idea of historical progress must be taken up into that of an objective cosmic process. M. Ribot makes many interesting applications of his law of mental heredity, which he rightly regards as a factor in mental evolution; as, for example, when he speaks of free-will as expressing the fixed personal factor in conduct,—namely, the inherited character. Of other philosophic writers who have been affected by the English doctrine of evolution, it is sufficient to name the late Léon Dumont, who was one of the first in France to apply the ideas of Mr Darwin and Mr Spencer to problems of psychology; and Professor A. Espinas, who in his work *Des Sociétés Animales* aims at furthering the theory of man's psychical derivation from lower types of mind. A writer who appears to be in a less distinct manner influenced by the idea of evolution is M. Taine, in whose psychological and historical studies the indirect effect of a study of English evolutionists is traceable. On the other hand, the older and teleological view of the world has not wanted its defenders. The most signal supporter of this direction, in the face of the doctrine of evolution, is M. Paul Janet, who, in his earlier work *Le Materialisme Contemporain*, and still more in his recent publication *Les Causes Finales*, draws a sharp line between the regions of the organic and the inorganic, and maintains that the complex arrangements of the latter are only explicable by means of teleological conceptions.

Recent German Writers.—Materialists.—In Germany the recent progress of speculation, since the time of the great systems, has exhibited a decided bent towards the problems which group themselves around the doctrine of evolution. First of all the efforts of the materialists directly tended to the formation of a consistent doctrine of cosmic evolution. Their earlier writings appeared just before the epoch-making publication of Mr Darwin, but the ideas of the latter

¹ See especially an article on "Cosmic Emotion," in the *Nineteenth Century*, October 1877.

have been incorporated in their later publications. In Moleschott's *Der Kreislauf des Lebens* the whole order of things is conceived as a continual flux and exchange of material elements, which accounts for all psychic life no less than for bodily life, and of which man, equally with the lower animals, is a temporary product. L. Büchner has sought, in his work on *Man* and his *Six Lectures on the Darwinian Theory*, to defend the new doctrine of organic evolution as a necessary factor in the materialistic conception of the world. The latter work connects Darwinism with the whole history of materialism. The former is a somewhat feeble attempt to attach man's ideal aims in the future to the evolutionist's conception of his past history. The writer appears to think that something equivalent to the process of natural selection is to effect man's future progress, but the idea is not presented with any definiteness or precision.

Combination of Mechanical and Teleological View of Evolution.—After the materialists we come to a number of writers, who, under the influence of advancing physical and physiological science, have sought to construct a mechanical conception of the order of the world. Some of these have contented themselves with sketching a natural history of the cosmos, others have connected their mechanical conception with peculiar philosophical ideas.

Czolbe.—A curious combination of the mechanical and teleological conceptions of the world is to be met with in the system of Czolbe. In his first works, *Die neue Darstellung des Sensualismus* and *Die Entstehung des Selbst-Bewusstseins*, Czolbe regards the world as a product of elementary matter and organic forms both of which are eternal. According to this view, sensation and consciousness are products of particular combinations of movements (circular). To these two original principles he adds, later on, feelings and sensations themselves, which exist in a latent state throughout space, and form a kind of world-soul. Still later, he finds the substantial support of atoms and sensations alike in space, in which feelings are located no less than the material elements. To Czolbe our visible world, together with conscious minds, is thus a mosaic formed out of these elements, which group themselves according to mechanical laws in bodies and conscious minds. He thus adopts a theory of natural evolution which evades the difficulty of explaining the organic as a product of the inorganic, and mind as a product of matter. But he only achieves this by assuming the eternity of all organic forms, and by conceiving of the elementary sensations as themselves spatial or "extensional." Though the mechanical view of the world-order is most prominent in Czolbe, he combines with this a teleological and optimistic view, according to which all things make for the greatest possible perfection of conditioned happiness in every sentient creature.

G. T. Fechner.—Another writer who combines the mechanical view of the world with a curious metaphysical system is G. T. Fechner. Passing by his earlier works, in which he develops his idea of the world as a gradation of souls (including those of plants, an earth-spirit, &c.), we may best turn to his later work *Einige Ideen zur Schöpfungs- und Entwicklungs-Geschichte der Organismen*. Fechner takes a thoroughly mechanical view of the difference between organic and inorganic matter. But by help of this very difference he seeks to prove that the latter is a product of the former, and not conversely. The great law which determines the evolution of the world is the tendency to greater and greater stability, which law at once supplies a mechanical and a teleological conception of the universe. Organic bodies differ from inorganic in that their molecules are in a less stable condition than those of the latter. Hence we must suppose that the original source of the