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DARWIN AND THE HUMANITIES

BY
JAMES MARK BALDWIN

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To

ALFRED RUSSEL WALLACE

whose Interest, like that of his co-worker Darwin, extends to all the Humanities

PREFACE

This booklet had its origin in a paper on 'The Influence of Darwin on the Mental and Moral Sciences,' prepared by request for the Darwin Celebration of the American Philosophical Society, April 23, 1909. The paper was not presented at the meeting on account of my necessary absence from the country. Being greatly interested in the subject, however, I revised the manuscript on a larger scale, still adhering strictly to the original topic, with the result here set down. The book is still no more than an outline or sketch; but I have endeavored to make the successive points plain; and possibly the whole may be found clearer and more effective from its brief and succinct mode of presentation.

The subject is very attractive; its treatment should also prove useful. The numerous celebrations which the double anniversary of Charles Darwin's birth and the publication of the *Origin of Species* has inspired, have resulted in many statements of Darwin's influence in the Biological Sciences.[1]

[1] Of recent publications the following are due to the occasion of this dual anniversary: *Fifty Years of Darwinism*, by several authors, papers prepared for the celebration of the Amer. Assn. for the Adv. of Science, New York, Holt, 1909; *Darwinism and Modern Science*, a collection of papers prepared by Cambridge University, the University Press, 1909; *Linnæan Society of London, Darwin-Wallace Celebration*, July 1, 1908; *Proceedings* of the Celebration of the Amer. Philosoph. Society, April 23, 1909; *The Psychological Review*, Darwin Number, devoted to Darwin's influence on the Humanities, May, 1909, Review Pub. Co., Baltimore, Poulton 'The Centenary of Darwin,' *Quarterly Review*, July, 1909, and *Charles Darwin and the Origin of Species, addresses, etc.*, Longmans, 1909. Less expert readers may be referred to the follow-

It is natural that this should be the point of emphasis. Yet much repetition and some controversy have resulted; while the corresponding influence of Darwin and the growth of Darwinism, in the sciences of Mind, the Humanities broadly defined, have been but scantily traced out and recorded. Naturalists are not aware of the extent of it. Personally I find it necessary as never before, to call myself a 'Darwinian' simply from having written out in this little volume the relationships of the several branches of humanistic study, as I apprehend them, from the point of view of Darwinism.

Many things seem to be covered from this point of view as from no other. My favorite doctrines, and those in which my larger books have been in some measure original, seem now, when woven together, to have been consciously inspired by the theory of Natural Selection: I need only mention 'Organic Selection,' 'Functional Selection,' 'Social Heredity,' 'Selective Thinking,' 'Experimental Logic,' thoroughgoing 'Naturalism of Method,' etc. Such views as these all illustrate or extend the principle of selection as Darwin conceived it—that is, the principle of survival from varied cases—as over against any vitalistic or formal principle. Wherever I have found it

ing works expounding Darwinism in relation to other points of view, especially in biology: Conn, *The Method of Evolution;* Headley, *Problems of Evolution;* Plate, *Selektionsprinzip;* Kellogg, *Darwinism Today;* Poulton, *Essays on Evolution,* and *Charles Darwin and the Theory of Natural Selection;* Delage, *Hérédité et les grandes Problèmes de Biologie générale,* followed by the annual issues of the *Année Biologique;* Hæckel, *General Morphology;* Baldwin, *Development and Evolution;* Gulick, *Evolution, Racial and Habitudinal;* Brooks, *The Foundations of Zoölogy;* Metcalf, *Organic Evolution.* An interesting historical book is Osborn's *From the Greeks to Darwin.* For topical articles, with literary references, by several hands, see the writer's *Dict. of Philosophy.* Original works, which have become classical, as well as more special discussions, are cited in the text.

necessary to go beyond the 'Selection' principle, thus defined, it has been by interpretations, such as that of the theory of 'Genetic Modes,' which do not controvert or deny the universality of this principle, but explicitly recognize and utilize it. I am not a *philosophical* Dualist or Positivist; but *in the domain of science* I accept both these points of view. And I further hold that our philosophy must preserve and utilize the great results of scientific thought without subtracting one jot or tittle from their full and legitimate force. So, to make this confession complete—as far as may be without abusing the liberty allowed in a Preface—I must admit that the result of my labors for twenty-five years, the net result, that is, of my scientific work until now, is a contribution, whatever it may turn out to be worth, to the theory of Darwinism in the sciences of life and mind. I call it a 'confession,' but 'claim' would be a better word; for who would not consider it an honor to be allowed to 'claim' that he had done something to carry Darwin's great and illuminating conception into those fields of more general philosophical interest, in which in the end its value for human thought must be estimated? Of course from such a partial survey as that which is here attempted, one cannot reach more than a suggestion of what such a final estimate is to be; but one can anticipate something of the character of the verdict. I think the conclusion drawn on page 87 of this volume, to the effect that natural selection is in principle the universal law of genetic organization and progress in nature—human nature no less than physical nature—is that to which the lines of evidence we now have distinctly point; and while this still has somewhat the appearance of a forecast, it is one of those reasonable forecasts which give life and interest to the progress of science and philosophy alike. If such an anticipation should lead to renewed investigation looking to the

testing of the Darwinian theory in still further fields, it would have its use.

I hope, therefore, that this little book may serve to stimulate others, especially students of the further humanities, Anthropology, Philology, Political Science, Literary Criticism,[1] etc., to make careful survey of their respective fields with such an end in view.

I wish to add a word in this place on the relation of Mr. Alfred Russel Wallace to current Darwinism. The development of the Darwinian theory has tended to justify certain of Wallace's original views, rather than those of Darwin; and notably in just the one point—the exclusion of use-inheritance—which now serves to define Darwinism as distinguished from other theories, it is Wallace who has led the way. It may safely be said also, I think that the brilliant and significant researches made by Wallace subsequently to the announcement of the theory of natural selection, would practically have established that theory. Accordingly, the Darwinian theory of today might with entire appropriateness be called 'Wallaceism.' The extraordinary modesty and high scientific morality of Wallace[2] should not lead his contemporaries to deny to him an equal place with Darwin in the development of evolution theory; and it is with this feeling in mind that I dedicate this little book on 'Darwinism'—entirely without his knowledge—to the great naturalist, Wallace.

J. Mark Baldwin.

Paris, September, 1909.

[1] As, for example, the very interesting discussions of Prof. J. P. Hoskins on 'Biological Analogy in Literary Criticism,' in *Modern Philology*, April and July, 1909.

[2] See the address made by Mr. Wallace at the celebration of the Linnæan Society, *Linnæan Society of London, Darwin-Wallace Celebration, 1908* (July 1).

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DARWIN AND THE HUMANITIES

INTRODUCTORY

I

It should be remembered that the book which we today[1] associate especially with the name of Darwin—the book published just fifty years ago—was followed by another printed twenty years later. *The Origin of Species* was followed by *The Descent of Man.*[2] Darwin the zoölogist is Darwin the humanist as well. He wrote besides a *Biographical Sketch of an Infant.*[3] It is suggestive that the order or sequence in the issue of these works holds also of the working out of Darwin's theory in the two great groups of sciences: the results of natural selection were fairly well worked out in biology some years before the influence of the theory became marked in the mental and moral sciences.

We are today, however, in a position to speak of the influence of Darwin, and of the development of Darwinism, in the Humanities. Both in general ways, seen especially in the spirit and method of scientific inquiry, and in specific ways, seen in the actual use of the theory of selection, this influence is vital and transforming. Besides the mental and moral sciences proper, the political and historicial sciences, also, and the sciences of language and of race—philology, anthropology,

[1] This allusion is to the day of the celebration of the publication of the *Origin of Species* by the American Philosophical Society of Philadelphia. See the Preface.

[2] First ed., 1871. Quotations in this paper are from the American Reprint of the second edition, 1874. I cite also the American Reprint of the sixth edition of the *Origin of Species.*

[3] In *Mind*, O. S., II, pp. 285ff.

and ethnology—show it strikingly. It is, however, of the first of these great divisions of the humanities that I shall speak, endeavoring to trace this influence in some detail. And I shall proceed in what may, in a large way, be called the genetic order: the order, that is, of relative dependence and complexity, beginning with the branch of knowledge nearest to Biology and most dependent upon it, namely, Psychology, then taking up Ethics and Sociology, and finally proceeding to the more general topics of Logic, Scientific Method, Philosophy and Religion. Of these provinces it is in Psychology and Sociology that the most characteristic results are to be found; yet in the other fields mentioned the general change of method and attitude due to Darwin's theory is so pronounced that it can in no sense be considered less important.

II

It may no doubt be fairly assumed that the reader knows in a general way what the theory of Natural Selection, Darwin's great contribution to science, is and means. Yet there are certain misunderstandings of the matter that recur so persistently and die so hard that it may be well to outline briefly Darwin's actual teaching.

Darwin and Darwinism. The 'Darwinism' of Darwin himself might be taken to include all that Darwin believed and taught. This is not good procedure, however. The term 'Darwinism' has come to be applied to the theory of Natural Selection alone, together with those extensions and developments of it which preserve its essential conception; and this is the more necessary since the principal theory which has been developed historically in opposition to Darwin's, the Lamarckian theory, was also held by Darwin, as supplementary to Natural Selection. It is quite necessary, indeed, to set the

Lamarckian part of Darwin's views apart from the Darwinian part, and to consider the latter alone as true 'Darwinism.'

Lamarck held to evolution, and worked out a theory of its actual working.[1] He supposed that the forces of the environment worked directly to modify individual animals; and also that these were greatly modified by their own efforts, habits, and activities during life—by 'use and disuse,' that is. The modifications of both sorts, occurring continually, were then inherited from generation to generation, the result being a continuous change in certain directions which in time produced the enormous differences found between different species. The critical and essential factor in this theory, of course, is that of the inheritance, by the offspring, of the specific modifications undergone by the parents; for without this there would be no accumulation of changes from one generation to another. This was singled out, therefore, as distinctly the 'Lamarckian factor.' It is known variously as the principle of 'inheritance of acquired characters,' 'use-inheritance,' 'Lamarckian inheritance,' 'Lamarck's principle', etc.

This principle, so named after Lamarck, has been resolutely excluded in the later development of Darwinism, although it was accepted by Darwin himself. For Darwinians have found the principle of Natural Selection more comprehensive than its author did; and the 'Neo-Darwinians' of the last generation—led by the other great discoverer of Natural Selection, Alfred Russel Wallace—believe in the 'all-sufficiency,' literally understood, of Darwin's law.

What, then, is Darwinism, when the term is so restricted? What is Natural Selection?

[1] The reader may consult Prof. H. F. Osborn's *From the Greeks to Darwin*, for an exposition of the theories of evolution held before Charles Darwin.

It is simply the fact that *some living creatures survive and propagate their kind when others of the same kind can not. That is all.* Those that survive and propagate appear to have been 'selected'; but they are *naturally* selected, without any external interference or any further reason of any kind than just the fact that they survive naturally when others die. Hence the term 'natural selection.'

How is it, it may be asked, that so simple a fact can be of such consequence that the mere recognition of it amounts to a theory of evolution and establishes a great principle of science. To answer this question, we may point out the different steps involved in such a case of survival, with the resulting changes in the characters of the race when a vast number of such survivals have taken place during many generations. I will write down these points formally under numerical headings in order to introduce certain necessary terms at each stage of the exposition.

1. *Over-production with Variation.* Nature produces individuals in numbers vastly in excess of those which are destined to live. In every litter of pigs and every hatching of fish, there are some born to die or barely to keep alive. But there are others sure to live and to beget offspring. The differences constitute 'variation;' which is simply the fact that the several cases, when taken together, are individually different. Some are more 'fit' to survive than others.

2. *Struggle for Existence.* The result of this overproduction is a struggle or competition among the individuals. The little pigs struggle to suckle; the little fish to escape their enemies—with the result that some win and live, while others lose and die.

3. *Survival of the Fittest.*[1] Those that win are, of course, the ones most fit to meet the particular sort of demand made

[1] A phrase due to Herbert Spencer.

of them. They have the 'characters' required for the contest —good wind, strong legs, sharp teeth, etc. The others, the less fit, are 'eliminated.'

4. *Inheritance of Characters.* This is the final and most important link in the chain. Not only must the most fit live; they must also propagate their kind. The offspring must be like them in the respect in which they are themselves 'fit.' If the unfit or less fit are killed off, and so do not propagate at all, and the more or most fit do, then the next generation will be, on the average, *more fit than the preceding was.* That is, there is an advance from generation to generation in those characters upon which Natural Selection is acting. For example, suppose the gunners kill off each season the largest birds of a certain species before the mating time, then only the smaller birds will be left to pair and hatch their young: the result will be a gradual reduction in the average size of the whole species.

As nature acts continuously, through her great forces, such elimination and survival continue through ages; and there is thus a progressive evolution of characters of all sorts. The utility of any character to the animal adds to his fitness, and the useful character is further developed. This, then, is the theory of Natural Selection, currently called Darwinism.[1]

[1]Cf. the remarks, in the Preface, on Wallace's relation to 'Darwinism.'

CHAPTER I

DARWINISM AND PSYCHOLOGY[1]

I. Special Problems

In any attempt to measure the influence of Darwin in psychology, we should first of all appreciate the major contributions made directly to this subject by Darwin himself. His theory of 'emotional expression' is one such contribution, and his recognition of the place psychological characters as such have in organic evolution is another.[2]

In the first of these, the theory of the rise of emotional expression, we have a remarkable application of the principle of natural selection. Darwin's book, *The Expression of the Emotions in Man and Animals* (1872) is today the classic treatment of this subject, both by reason of the wealth of illustration he gives and also by reason of the fact that his theory is firmly established. Indeed there are today no theories in this field that do not essentially include Darwin's principle of 'serviceable associated habits'; according to which emotional expressions are serviceable habits of action, associated with specific types of mental experience, and fixed

[1] Three other discussious of this topic have been brought out in connection with the Darwin anniversary: Lloyd Morgan's in the work *Darwin and Modern Science*, Angell's in the Darwin Number (May, 1909) of the *Psychological Review*, and Hall's in the volume *Fifty Years of Darwinism*.

[2] Darwin's use of psychology in connection with social theory and ethics, and his remarkable comparative observations upon human and animal minds, are spoken of in later sections of this paper.

in the organism by natural selection. This theory is not only accepted, but it has served to supply a basis for new theories of the emotions themselves. According to the well-known 'James-Lange' theory, the emotions, understood in the sense of the coarser feelings, which are known to have characteristic modes of physical expression, are due to the reporting-back into consciousness, by a 'back-stroke' or organic reverberation, of the fixed and accomplished expressions. This theory undoubtedly explains many of the more fundamental and native emotional reactions; it is both confirmatory of the original theory of Darwin and supplementary to it.

As to the second point, the recognition of mental characters, it appears that Darwin's views have been equally influential. He saw that the evolution of mental characters and traits was as important as that of the purely organic, and that the two were correlated with each other.[1] We find in certain of his theories definite recognition of mental characters, both as needing to be accounted for and as themselves important as evidence. In the theory of 'sexual selection,' for example, he recognizes the stimulating effects, through the senses, of color, form and action, and finds in this the reason for the evolution of these physical characters in the forms they actually show. In the theory of the origin of specific 'color markings' and other superficial characters which make known one individual of a species to another—a point of view developed by Wallace[2] in important ways—mental characters such

[1] In another place (*Development and Evolution*, ch. i, ii), I have pointed out that there are not two evolutions, one 'organic' and the other 'mental,' but that mind and body have evolved by one process and in one series of graduated stages; evolution, that is, has been 'psycho-physical.'

[2] Wallace's early reports in *Journal of Travel* (ed. by Murray), vol. 1, may be referred to, as well as his later works. The principal writings of Alfred Russel Wallace are *Darwinism, etc.; Natural Selection: and Tropical Nature;* and *Studies Scientific and Social.*

as observation, recognition, gregarious habit, appetite, etc., are cited as affording striking instances of the operation of natural selection. And it is interesting to note that Darwin did not merely place the psychic functions and characters on a par with the physical, as items in which, on account of their utility, evidence of natural selection might be seen; he recognized with Lamarck a certain efficiency in the mind itself to produce, through effort, results which heredity fixed and transmitted. This is especially to be remarked as showing Darwin's openness of mind to theories that appeared to be supported by facts; although, in the result, as psychologists, we have to look upon his own theory of natural selection as the true one. The very great importance of psychical characters, in connection with the evolution of organic forms and colors, has now been made out in many cases; notably in the theories of mimicry and protective coloration, in which not only the sight and taste but also the 'profiting by experience'—the 'education'—of individuals comes into play. The development of the theory of selection with reference to organs and functions involving joint physical and mental characters is found at its best in the theory of the rise of animal instinct—a problem so far-reaching and fundamental that I select it as a starting point for the further exposition.

Instinct. It is in connection with the problem of instinct, indeed, that the trying-out of the selection theory in matters psychological was precipitated. The conditions which made this question crucial were discerned early in the development of Darwinian controversies. In such representative writers as Spencer and Romanes we find the problem emphasized: the one making instinct the citadel of the defence of Lamarckian principles, the other finding it necessary to adhere to Lamarckism, although with growing reluctance, on account of the difficulties in the way of a purely Darwinian

view of instinct. One of these writers was polemical against Darwinism; the other, although on the whole more sympathetic, nevertheless joined in the criticism of the view that natural selection alone, without the inheritance of acquired characters, was sufficient to account for instinct. The two great objections to a purely Darwinian theory of instinct may now be stated.

First, it was maintained in theory that, as instinct is a very complex function, which becomes of utility to the creature possessing it only when it is perfect, partial and undeveloped instincts would be not useless only, but actually damaging. Imagine an animal having but a partial instinct to swim: liking the water, but capable only of beginning the movements necessary to keep afloat. His very tendency to try would only endanger his life, by taking him into the water. Or imagine a bird capable only of beginning the very complex serial processes necessary to build a nest. Where would be the utility of this, and how would natural selection come into operation upon these beginnings, to build up the completed act.[2] This is the objection from so-called 'selective value'—a phrase at one time very current in these discussions. It is in the case of instinct that the objection based on 'selective value' is strongest. There must be, it is said, a sufficient development of the instinct *at the start* to give it 'selective value,' and so to secure its further fixing in the fully evolved

[1] See Romanes' presentation of these objections in his *Post-Darwinian Questions: Heredity and Utility*. Darwin's own detailed reply to them is to be found in the last edition (sixth) of the *Origin of Species*, chap. vii; his account of instinct is in ch. viii of the same work. The present writer's full discussion of these points is to be found in his *Development and Evolution*, 1902, ch. v.

[2] Darwin himself cites the destructive character of the partial instinct of certain birds which dispense with nests of their own, and do not succeed in depositing their eggs cuckoo-like in other birds' nests. *Origin*, ed. cit., vol. i, pp. 335 f.

function. Romanes urged this objection consistently to the last, holding that intelligence must have been operative to secure these complex adjustments, and that the results of the accommodations intelligently made must have been handed down by heredity until the instinct became independent of the intelligence—the whole being known as the theory of 'lapsed intelligence.'

Second, the objection based on 'correlation' of characters or co-adaptation. An instinct, it is said, is not a simple character, of such a sort that we can speak of slight or fluctuating variations in it, as we would of variations in length of nose, or color of skin. On the contrary, it is an act involving the 'correlation' of many relatively complex and independent functions all working together with the greatest nicety of grouping and association. It involves the co-adaptation of many parts, of a sort which, when done intentionally, requires a long and painstaking education of various groups of muscles, with correlation of the senses, such as vision with hearing, touch with muscular sense, all in an act slowly acquired and made habitual. If any element in the combination fails or is displaced the whole is wrecked. Now, says the critic, how can 'spontaneous variation,' of a congenital sort, produce these necessary correlations? Would it not require a conspiracy of the forces of variation, distributed in various and remote portions of the body, to produce such a joint result, and to produce it at a bound, finished and effective? Would the laws of chance countenance this?

This is the objection from 'correlated characters' or 'co-adaptation,' also strongly urged by Romanes in his latest discussions. And to meet them the two writers mentioned, both of them having claims to psychological consideration, fell back upon the Lamarckian factor. These co-adaptations, say they, show the inheritance of the actual learning and prac-

tice of generations. The American author Cope also strongly urges these considerations.[1]

These objections, when stated in general terms in zoölogy, have been met by Darwinians in various ways; but the zoölogists, dealing generally with simpler characters, have not fully realized their force in the case of instinct. The development of Weismannian views, involving the complete separation of germ-cells and soma or body, and the pre-formation of organic structures in the germ, which is the exclusive bearer of the hereditary characters, only sharpened the issue, by ruling out once for all any directive influence upon evolution of individual accommodations, including, of course, the intelligent adjustments which animals abundantly show. Darwin's hypothesis of 'change of function'—according to which an earlier but different function in each case served to preserve the incipient stages of the instinct—while undoubtedly useful in explaining certain structures in the lower forms of life, does not fully answer here.[2] For even if an instinct be considered as made up of a variety of simpler functions, as

[1] E. D. Cope, *The Primary Factors of Organic Evolution.* It is interesting to note that Darwin recognized and often utilized correlation, but considered it fundamentally obscure. See *Descent of Man*, ed. cit., 'Preface,' and pp. 48 f. It is plain that it was such cases that led Darwin, also, to the full acceptance of the inheritance of acquired characters, as a careful reading of his chapter on 'Instinct' will show (*Origin*, ch. viii). In certain arguments he even urges the *improbability of correlated variations*. See *Origin*, pp. 280 and 318.

[2] One of Darwin's famous illustrations is that of the derivation of the lungs from the fish's swim-bladder (*Origin*, p. 276): see other cases in the *Origin*, ch. vii, esp. pp. 309 ff. Darwin also discusses the cases of imperfect function considered as transitions to complete instinct (*Origin*, ed. cit., pp. 330 ff); and his claim that in many cases the early stages were mere physiological characters, correlated with other active functions, should not be overlooked (*Origin*, ed. cit., p. 266). It is a supposition never yet done justice to in the discussions of this question.

it usually is, still the combination of them in a single act would be all the more difficult if they had already become separately fixed. We find an analogous problem in the learning of any complex new action, such as type-writing or bicycle riding; we can make the necessary movements separately, but not only can we not make them together without excessive pains and much practice, but the practice requires a flexibility of action, and readiness of inhibition, the opposite of fixity and habit. What is the likelihood, then, that spontaneous variation would turn out the combination fully formed?

To the psychologists, at any rate, who are sympathetically disposed toward Darwinism in principle, the problem of instinct comes, in view of such difficulties as these, to represent that of the method of evolution itself; at the same time that the extreme facility and ease of the Lamarckian solution does not appeal to them—with some eminent exceptions, notably Spencer and Wundt—for it in turn leads to conclusions which are quite unacceptable. If experience is inherited why have not racial psychological experiences of the most ancient and uniform order—such as those of space perception, time estimation, verbal speech, the rudiments of the three 'r's,' drilled into every child and used with absolute uniformity throughout life—why have not such functions become congenital? To many psychologists, the Lamarckian theory has seemed, on the whole, too easy and superficial.

One has only to compare Wundt's weak defence [1] of 'use-inheritance,' with James' radical criticism[2] of Spencer, to see on which side the balance of psychological opinion would be likely to array itself.[3]

[1] W. Wundt, *Human and Animal Psychology* (Eng. Trans.)

[2] W. James, *Principles of Psychology*, vol. ii, last chapter.

[3] Darwin's chief discussion of the effects of use and disuse is to be found in his work, *Variation in Plants and Animals under Domestication*.

It was through Weismann, however, that this problem again became urgent in biological circles, and two of his most famous hypotheses were framed to extricate the Darwinian principle: the hypotheses of 'Intra-selection' and 'Germinal Selection.' Both are attempts to deal with complex and correlated characters without resort to the Lamarckian principle. Weismann's criticism of Lamarckism and his constructive views on heredity are equally famous.[1]

Intra-selection. This principle of Weismann was an extension of the very fruitful conception of Roux, called by him the 'struggle of the parts,'[2] a conception which carried the idea of natural selection into the adjustment of parts to one another within the organism. Weismann generalized this in his famous Romanes lecture at Oxford, on *Intra-selection*,[3] and gave to Roux' 'struggle of the parts' a more functional turn. The correlations of the organism are brought about, he supposed, during *development* through the actual flexibility of the organs. The muscles accommodate themselves to the growing of the bone, the strength of neck to the weight of horns, the grouping of functions to the requirements of the situations of life, in the greatest detail. This is considered so essential and radical a process from the start in each individual's career, that the living habits of an animal species are constant and progressive only because the detailed processes of intra-selection *are repeated in an identical way generation after generation*, by every individual creature of the kind in question. Thus—and this is essential to Weismann's view—the continuity of the 'germ-plasm' remains undisturbed; it is the 'soma,' the body, that is molded and

[1] See A. Weisman, *Essays upon Heredity*. (Eng. trans.)

[2] Roux, 'Die Kampf der Theile im Organismus' (1881), *Gesam. Abhand. ueber Entwicklungsmechanik d. Organismen*, Vol. i.

[3] *The Effect of External Influences upon Development*, A. Weismann. (1894.)

remolded in analogous ways and with identical results in all the individuals of successive generations.

It is interesting to note that originally this idea of a selective process within the organism—a fruitful extension of Darwin's principle—was not exclusvely the biologist's possession. It was independently conceived by certain psychologists at about the same time. Theories of organic accommodation or adjustment involving an 'over-production' of movements, with a resulting selection of favorable combinations or 'happy hits,' had been advanced by Spencer and Bain, to account for the learning of acts of skill, quite apart from the question of evolution. Spencer's hypothesis was very general: he merely postulated an 'excess discharge' from the nervous centers, in certain conditions, from which 'happy hits' or adaptations were made. Bain made the theory more precise, holding that pleasure resulting from the fortunate combinations 'clinched' these movements, while pain inhibited the unfortunate ones, and so the adjustments secured were preserved. Later theories have worked definitely on this basis, applying directly and consciously the idea of natural selection, and using the term 'functional selection' or some similar expression for the fixing of accommodative movements.[1]

This is a more psychological or psycho-physical theory than those of Roux and Weismann. It gives a solution indeed practically identical in result with theirs, but having the added motive of Darwinian selection. The psychologists give

[1] A critical account of the theories of Spencer and Bain is to be found in ch. vii of my work, *Mental Development* (1894; 3d ed., 1906). 'Functional Selection' was suggested in that work (*Mental Development*, 2nd ed., 1895); it is used by Lloyd Morgan, *Animal Behaviour*, and others. See also the writer's earlier article, 'The Origin of Volition,' in *Proc. Int. Cong. of Psychol.*, London, 1892.

attention to the actual processes as they take place in the individual.

But this is not all. The biologists and comparative psychologists have together closed in upon the problem of learning in general. The problem of 'educability,' of 'profiting by experience,' has been attacked throughout the entire range of organic forms, with striking harmony of results, summed up by the phrase 'trial and error.' From the infusoria's limited modification of behavior[1] to the child's extended education, it is found that all learning is by a process of strenuous, excessive, and varied discharges. Through such discharges adjustive modifications occur in the mass of earlier habits ; pleasure and pain, and in the higher animals, attention, being the regulating functions. It takes place in a manner to which the Darwinian conception of selection is strictly applicable. Quite apart, then, from the details of the analysis in particular cases, and from the problem of isolating the psychic and organic factors involved, we may record this result as a striking application of Darwinism.

Its bearing on the question of the origin of instinct is, however, still very ambiguous. Are we to stop with Weismann and hold that these complicated processes of learning specific acts are repeated by every individual of every generation, with no effect upon the variations of the germ-plasm, and no influence upon heredity? If so, how could they be embodied in instinct?

Weismann saw the difficulty of securing the perfection of the instincts on such a basis; either it amounts to denying that the seemingly perfect instincts are ever congenital, or if it be

[1] See Jennings, *The Behavior of the Lower Organisms;* and for higher animals, Ll. Morgan, *Animal Behaviour*, and the literature cited in Washburn's *The Animal Mind.*

allowed that they are congenital, it encounters the criticisms urged by Romanes and others—to the effect that the preliminary stages are useless, and the necessary correlations of characters are most unlikely. Weismann therefore made a further application of the selection principle to the *germinal elements themselves*, finding the locus of struggle and survival still more hidden within the organism. This is the hypothesis of Germinal Selection.[1] Apart from any experimental evidence for this conception, it may be said that it makes the theory of preformism more ironclad than ever, since the germs selected bear their intrinsic potencies of development.

Organic Selection. It appeared clear to others that the hypothesis of germinal selection was not necessary—so far as the problem of instinct was concerned. The conditions of the problem were now so clearly defined that a further suggestion was made simultaneously by certain psychologists and biologists alike,[2] which showed that the resources of Darwinism were not exhausted.[3] It appeared evident that if Darwin's principle of variation with selection, on the one

[1] This, as well as the other important hypotheses of Weismann, is expounded systematically in his general treatise, *The Evolution Theory*, 1904; see also his paper in the Cambridge anniversary volume *Darwin and Modern Science*.

[2] Ll. Morgan, F. H. Osborn and the present writer (to whom the name 'Organic Selection' is due). The original papers of all these writers (of date 1896), together with expositions by Poulton and others, are collected in my volume *Development and Evolution* (1902). Prof. Ll. Morgan gives a new statement in the Cambridge volume, *Darwin and Modern Science*, 1909, pp. 428–9. In the same volume (p. 41) Prof. Weismann cites his Romanes lecture as having anticipated the theory of Organic Selection. As I have already discussed the point elsewhere, *Development and Evolution*, pp. 183ff, it need not be taken up again. In any case the theory is strengthened by Prof. Weismann's adhesion to it.

[3] It was actually in discussions of instinct, indeed, that Prof. Ll. Morgan and the present writer hit upon this conception.

hand, and Weismann's principle of 'intra-selection,' taken with the psychologist's 'functional selection,' on the other hand—if these principles were true, then a further result followed of itself. If, that is, a selection of processes and habits goes on within the organism—a functional selection resulting in a real molding of the individual—there would be at every stage of growth *a combination of congenital characters with acquired modifications;* natural selection would fall in each case upon *this joint or correlated result;* and the organisms showing the most effective combinations would survive. *Variation plus modification,* the joint product actually present at the time the struggle comes on, *this is what selection proceeds upon,* and not, as strict neo-Darwinism or Weismannism supposes, upon the congenital variations taken alone.

The result is that variation would tell most *when in the direction in which the accommodations were being made and found useful;* and on the other hand, accommodations would be made *where the variations best permitted.* There would then be an accumulation of variations, 'coincident'[1] in direction with the acquired modifications, the function becoming more and more congenital from generation to generation. The accommodations and modifications of the individual serve as a supplement or screen to his endowment; and in course of time the endowment factor, by variation simply, with no resort to the actual inheritance of acquired characters, comes to its perfection. This result of the 'coincidence' of modification and variation in guiding the course of evolution[2] has been called 'organic selection.'

[1] A phrase due to Lloyd Morgan. See his volume, *Habit and Instinct.*

[2] The general point of view has been styled that of evolution by 'Orthoplasy.' On the terminology of this theory, see *Nature,* 1897, p. 558. This point of view is strictly Darwinian; but neither this way of putting the factors together, nor the results which follow

This result of the operation of the recognized factors is very simple and very evident. It meets both the objections urged to the Darwinian theory of instinct. For, first, it

from it—the opportunity it gives to mind to guide and direct evolution, by preserving and forwarding variations in *intelligent and social lines*—occurred to Darwin; probably because he was more and more ready in critical cases to accept Lamarckism, as, for example, in his discussions of the origin of the giraffe's neck (*Origin*, vol. i, pp. 276 ff.), and of the American monkey's prehensile tail (*ibid*, vol. i, p. 294), both cases in which active accommodation with coincident variations are actually sufficient. A similar case is before me as I write, observing the swans of Lake Geneva. The young of different stages of development show relatively different length of neck. Those with longer necks can feed under water over a greater area of the bottom. Constant stretching of the neck not only develops each swan, but may be supposed to have encouraged variations in the direction of longer neck, that is variations coincident in direction with their active accommodative processes. So the long neck has been evolved.—Darwin held with great consistency that instincts have been gained, step by step, "through the variability of the mental organs and natural selection, without any conscious intelligence on the part of the animal, during each successive generation." *Descent of Man*, ed. cit., p. 77. See also, p. 76. In one case only do I find that Darwin recognized the results, in the way of continued 'coincident' variation, which follow upon individual accommodation or habit. I have just come upon the passage, which I quote:

"It has been objected," he says "to the foregoing view of the origin of instincts that the variations of structure and of instinct must have been simultaneous and accurately adjusted to each other, as a modification in the one without any immediate corresponding change in the other would have been fatal. The force of this objection rests entirely on the assumption that the changes in the instincts and structure are abrupt. To take as an illustration the case of the larger titmouse, this bird often holds the seeds of the yew between its teeth on a branch, and hammers with its beak till it gets at the kernel. Now what special difficulty would there be in natural selection preserving all the slight individual variations in the shape of the beak, which were better and better adapted to break open the seeds, until a beak was formed as well constructed for this purpose as that of the nuthatch, at the same time that habit, or compulsion, or spontaneous variations of taste, led the bird to become more and

accounts for the immature stages of the instinct, by recognizing that at these stages the endowment is supplemented by accommodations sufficient to give them selective value: a 'little sense' perhaps, as in imitation or play, is displayed.[1] In this way the appearance of intelligence—of 'lapsed intelligence'—is given to the function; for evolution has advanced by the aid, and in the direction, of conscious adjustment. And, second, it not only allows, it makes use of, the widest correlation of characters; for in the processes of intra-selection and functional selection, just the molding and correlation of the parts to an organic end is what is most telling for survival.[2] Let these keep the species alive for generations, as Weismann supposes, or through what Darwin calls 'transitions,' while coincident variations are being accumulated to supersede them, as the hypothesis of organic selection supposes, and there results a congenital correlation, such as is shown in the complex instincts. There is the appearance of what

more a seed eater? *In this case the beak is supposed to be slowly modified by natural selection, subsequently to, but in accordance with slowly changing habits or taste.*" He then goes on to suppose the contrary process taking place in the feet—the habits following variations in structure toward increased size. This is a perfectly clear resort to the hypothesis of 'organic selection,' and while it is simply thrown out in a single instance and not taken advantage of in other cases, it still shows that Darwin would have sympathized with the more extended use made of the principle by certain contemporary writers. (The italics are mine.)

[1] It was shown by Professor James Ward, Art. 'Psychology,' *Ency. Brit.*, ninth edition, who used the term 'Subjective Selection' to characterize the influence of consciousness, that the presence of mind would enable the animal to 'select' his environment in some measure.

[2] This aspect of the matter has been especially dwelt upon in my own discussions, in contrast to those of Morgan and Osborn (see *Devel. and Evolution*, chap. xiv.) It was suggested to me in the course of prolonged experiments upon the learning of adjustive acts by young children.

Romanes, Cope and other Lamarckians assume—the inheritance of modifications—but it is accomplished by the operation of Darwinian factors only.

This point of view has been generalized for all those functions in which acquired modifications are combined with variations in the life history of the organism;[1] it is difficult to find any, indeed, in which they are not so combined.

It also explains the decay of congenital characters (*e. g.*, of instincts) where this occurs; for in cases where the intelligent or other adjustive factor is on the whole of greater utility, variations toward the disintegration of the instinctive congenital part, would be selected.

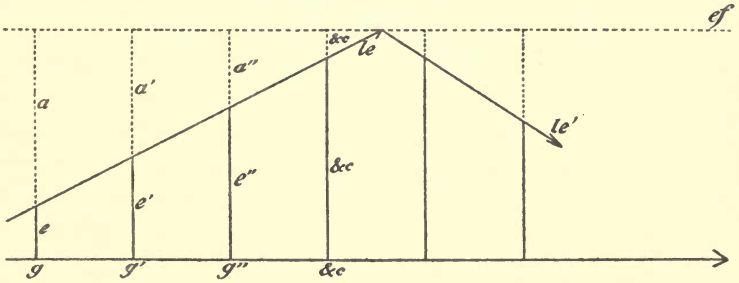

Diagram illustrating the rise and decay of a congenital function, such as instinct. *g*, *g*,′ etc. = succession generations; *Ef* = line of effective function; *le*, *le*′ = course of evolution; *e*, *é*, etc. = congenital endowment; *a*, *a*′, etc. = functional accommodation. Natural selection falls upon the effective function *ae*, *a*′*e*′, etc.; and utility alone determines when the congenital endowment *e*, *e*′, etc., shall be favored by selection, as shown in the ascending line *le*, or when it shall fall away in favor of the accommodative factor (*a*, *a*′ etc.), as shown in the descending line *le*′. The striking case of the latter is that of the growth of intelligent action superseding instinctive.

Having thus illustrated, by means of the most complex functions in the whole range of animal habit, the working out

[1] See the section on 'Plasticity,' just below.

of Darwin's principles, we may now broaden our view to take in more explicitly the psychological aspects of evolution.

The theory just outlined presents, to my mind, the only approach we have to an intrinsic union of biology and psychology in the handling of the evolution problem. It is plain that such a derivation of instinct makes use of the presence of the rudiment of mind, wherever it is found, among the accommodative processes which act to preserve variations. For as I have just said, give the animal a little sense[1]—a grain of the capacity to 'profit by experience,' to imitate, to co-operate, to deceive,[2] to remember and distinguish what is good for it from what is bad—a bit of *intelligence*, broadly understood, and he is started on the career of learning in comparison with which his earlier achievements become quite insignificant. If, in short, we are to allow that accommodative or learning processes of whatever kind do have any influence, however indirect, on the course of evolution, then that prime, that superb weapon of learning, mind, comes to its own and starts upon its splendid career. But if this be so, if mind be natural and also useful, then we are still of course within the Darwinian circle of ideas. Why are not mental faculties and functions to be considered characters which have been evolved by selection for their utility?

Darwin held this, as we see by reading again the *Descent of Man*, chapters iii and iv, which constitute still one of the best treatises on Comparative Psychology. But instead of the desultory recognition of the place and effectiveness of mental states in a theory dealing mainly with the physical, we now see

[1] "A little dose of judgment or reason, as Pierre Huber expresses it, often comes into play, even with animals low in the scale of nature." Darwin, *Origin*, ed. cit., p. 320.

[2] Darwin cites the admirable instance of a race of rats surviving in competition with others by reason of their superior 'cunning.' *Des. of Man*, ed. cit., p. 91.

the universal principle of the relation of mental to organic evolution. Mind is correlated with plasticity, its evolution with that of brain and nerves. The history of the evolution of these organs is also that of the evolution of mind. In this we have the next great step in which biology and psychology join hands in a safe and accomplished generalization: that of the correlation of nervous plasticity with mind, of 'educability' with 'sense.'

Plasticity and Mind. One of the striking features, perhaps the most striking, of the evolution of mammals is the progress made by the brain. It is the organ of increasing plasticity and 'educability.'[1] Its evolution has been correlated with the decline of the instinctive and completely congenital functions. As we advance upward in the mammalian scale, we find decreasing instinctive endowment and increasing plasticity, accompanied by increasing mental capacity and educability. The human infant is poorest in instinctive endowment, most helpless at birth, but most teachable and most highly equipped with brain and mind.[2] This means that, the utility of the conscious type of action once established, the premium put on variations in that line, carrying with them more plastic nervous substance and decaying congenital functions, was both enormous and effective. Once begun, intelligent adjustment

[1] A term used by Sir Ray Lankester (*Nature*, lxi, 1900, p. 624; see also Lankester's *The Kingdom of Man*, p. 123), who has pointed out the important genetic correlations of increasing plasticity.

[2] In Darwin's phrase, *Descent of Man*, ed. cit., p. 124, in man, instinct is replaced by 'impulse guided by reason and experience. Darwin's use of terms is that followed here. The contention that man has a great many instincts involves the definition of instinct according to which all native impulses or tendencies come under the term—a very confusing usage. According to our usage an instinct is a function *carried out in a definite way, although not always perfectly, without learning.*

supersedes all other kinds. So we find a remarkable intermingling of types of function and even of different ways of performing the same function, in the higher animals and man. The union of mental and organic characters found fit, in the way mentioned above, has varied with the relative utility attaching to one combination or another[1] (cf. the Diagram). Some functions of urgent and vital importance have remained instinctive or reflex. In other cases, the instinctive has been largely or in part superceded by the intelligent. We find a very wide range of cases of more or less 'imperfect' instincts in which we may see intelligent learning actually supplementing the imperfect native reactions. Natural selection *falls upon the combination, and the best combination wins out*—sometimes this, sometimes that. Where a reflex of extreme rapidity, as the reflex winking of the eye, is of importance, it is preserved, in spite of the duplication of the function from the higher centers of voluntary and intelligent action. In other cases, such as the movement of the ear in man,[2] all utility seems to have vanished from both types of action, although in certain of the lower forms the ear movements are most important for acuteness of hearing and the localization of sounds. All this takes place in detail while the great progression in mind, in plasticity, in learning capacity, is going on. Some functions replaced by intelligence are running down hill, while others, not getting the full utility of the intelligence, or having a special utility of their own, are being built up, both processes alike being fed by variation.

The force of this, for our present purpose, is this: plasticity

[1] Cf. Lloyd Morgan's illustration from the habits of young chicks *Habit and Instinct*. See also K. Groos, *The Play of Animals* and *The Play of Man*.

[2] A case interestingly discussed by Darwin, *Descent of Man*, ed. cit., p. 15. The duplication of functions in this sense is fully discussed in my *Development and Evolution*, ch. vi, sec. 1.

is a real character, a character the opposite of fixity. It is opposed even to the potential sort of fixity assumed by preformism—the theory that all subsequent adjustments are already present potentially in the germ. It leaves to the organism genuine alternatives; genuine novelties of adjustment are possible. And consciousness, intelligence, is also a real character, correlated with plasticity. Both are present together, however we may account for it; and both have been advanced for their utility, as Darwin's hypothesis requires.[1]

The Utility of Mind. A further word remains to be said concerning the utility of mind, or of the intelligent type of function. Intelligence is of the nature of a general or 'blanket' function: it can be turned here and there for the performance of anything within its reach. It has its early illustrations among the animals in imitation and play, to which such general utility attaches. It has only recently been shown how enormously useful both imitation and play are to many species, especially in their family and gregarious habits. We see in these functions, as in the more developed intelligent functions, ways in which many of the organic processes—the exceptions being of the vegetative and reflex sorts—may be directly supplemented, by the creature's efforts consciously directed, to the actual saving of its life. This becomes, then, a capital instance of the operation of 'organic selection;' of the union and joint utility of congenital and acquired characters, for the incidence of natural selection. *Since the utility attaches to the combination,* it is the combination that has survived in various forms, reaching its culmination in the mind and brain of man.

[1] See Darwin's terse sentences concerning the origin of the intellectual faculties by natural selection, *Descent of Man,* ed. cit., p. 140. In his detailed discussions, chapters iii and iv of the same work, his object is to show that man's mind differs only in degree of development from the animal's.

This we may call Darwinism psycho-physically applied. It is well, of course, to cast about for other principles—to work out Vitalism, Mendelism, Mutationism, etc.[1]—in those sciences which do not have to deal with the problem of adaptation, or of the accommodation of the organism through its external characters. But wherever the question arises of the relation of organisms *inter se*, and to the environing conditions of their life, the foregoing are not only the fruitful principles, they are the only principles we are able to consider at all. Variation, accommodation, selection—these three.

Psychologists are of necessity concerned with the relations of individuals as wholes to one another and the world of nature. Their problems are those of accommodation and adaptation; of action, and of thinking considered in relation to action. We find, therefore, that the explanations due to Darwinism are bringing this great field into fruitful union with biology; and the recognition of joint mental and physical characters, utilities, and selections, is of the greatest evidential value for Darwinism. It more than offsets any weakening that may have seemed to come in recent years from embryology or cytology; for it adds to the range of Darwin's principle the whole stretch of the humanities, the sciences of the life and works of man. It is to the credit of Darwin himself that he did not claim to have discovered the principles of the minute internal organization of animals, with which the newer biological sciences concern themselves; and even his principle of variation left the questions of the

[1] All these types of theory are well represented, both pro and con, in the memorial volumes cited, and I need not discuss them here. It is necessary, however, to deprecate the animus that some writers of these schools show toward Darwin's theory. T. H. Morgan (vitalist) writes a veritable caricature of Darwinism (in his *Evolution and Adaptation*) and Bateson (mutationist) enters the bull-ring whenever he hears of fluctuating variations.

origin, exact extent and range of such changes open for the detailed investigations of the future.[1]

We should expect, however, that such a thing as consciousness, mind, having the critical utility and enormous development now assigned to it, would show some characteristic laws of operation; and that, in the carrying over of Darwinian principles into this field, certain modifications and extensions of these principles would be come upon. This is the case. The first general question to which I wish to advert in this connection is one about which certain of the fiercest controversies have been waged—the question of heredity.

Heredity, Physical and Social. It will have been noticed that in the foregoing we have assumed that the operation of heredity is restricted to congenital characters, finding it unnecessary to believe that acquired modifications are handed down. In this position, the general rejection of the Lamarckian view of heredity, now common to biologists and psychologists alike, is concurred in. The variations which we find available for physical inheritance are congenital changes; the utility of individual modifications is confined to their influence in screening, supplementing and preserving the natural equipment of individuals and species, and thus directing the course of evolution. We have no reason to depart from this position in the matter of mental variations and the education of the individual. Mental characters already congenital are inherited; and the plasticity, which intelligence carries with it, is a congenital character. There is no evidence of the transmission of the results of mental education or experience; but both physical and mental endowments and the variations arising in them are subject to continuous physical transmis-

[1] His candid confession, already cited, of ignorance as to the causes of 'correlation' is a case in point.

sion.[1] So far the consistent application of Darwinian principles.

But when we come to ask for a full account of the propagation of mental acquisitions from generation to generation, we find it necessary to recognize another form of handing down or real transmission. Once admit that the intelligence, even in its simplest forms, as seen in imitation, play and the resulting accommodative actions, can be applied to the learning of anything, and that variations in plasticity are selected to allow of its development—this once admitted, we have the possibility of a continuous handing down from generation to generation, a 'social heredity,'[2] which is no longer subject to the limitations set upon physical heredity. This recognition of the continuity of tradition or social heredity is of great importance in the social sciences; and it is not foreign to biology and psychology. It is found in operation in animal companies, where imitation is active to enable the young to

[1] We may, of course, follow Darwin's prudent example, and await further evidence; but since his time the supposed instances of inheritance of acquired modifications have been one by one given up, and today such inheritance, even if admitted, would be restricted to cases of modification of the germ plasm; and this is practically only another name for variation in the Darwinian sense. Recent experiments on the artificial modification of the germ cells, as those of MacDougal on plants (Carnegie Inst. publications, No. 81; see also a paper by MacDougal in the Darwin memorial volume, *Fifty Years of Darwinism*, New York, 1909), show that the results of such modification are not 'specific,' that is, not in lines that could be likened to the inheritance of specific changes; but 'general,' and akin to the spontaneous variations that occur under the action of changed environmental conditions. It should always be remembered that Lamarckian inheritance, as a working principle, requires the reproduction in the offspring of *specifically the same* modification as that which the parent underwent.

[2] This phrase was introduced by the present writer in his *Social and Ethical Interpretations*, 1st ed., where the principle is worked out in detail.

learn the actions, calls, and general behavior of parents and associates. Darwin and Wallace[1] both early recognized this factor at work in the family life of animals and birds. It will recur below in our consideration of the social sciences; here I briefly call attention to this factor, in order to discuss the gregarious sort of variations it requires and develops under the action of natural selection.

Gregariousness. We are all familiar with the general fact of gregarious habit among the animals. We may use the term for all sorts of natural association in families, companies, etc. We are also very sure that much of this has an instinctive basis, and also that in some cases much of it is acquired. In fact there seems to be usually an adjustment of native and acquired elements, a 'joint' state or union of characters very similar to that which we have found to be required for the derivation of instinct and the rise of intelligence.

So soon, however, as we inquire as to the sort of variations such gregarious habits or instincts require, we find a most interesting correlation not before brought before us. It is plain that for any sort of co-operative habit to which utility would attach, two or more individuals must be brought into a mode of common action. Either they must be prepared to unite in doing the one thing jointly, or their activities and characters must be so correlated that the action of one will supplement and make effective the action or characters of the other.[2] For example, in an animal or bird family,

[1] See Darwin, *Descent of Man*, ed. cit., pp. 77, 82, and 97, and his citation from Wallace, *Contrib. to Natural Selection*, p. 212, a point much developed in later publications by Wallace. Darwin probably overestimated the 'perfection' of many of the animal instincts at the first performance; Wallace shows that they are often very imperfect until supplemented by imitative learning.

[2] Darwin discusses such cases, *e.g.*, the correlation of the mammary gland in the mother with the sucking instinct of the young, (*Origin*, ed. cit., vol. i., p. 296).

the parental instincts on the side of the old must be correlated with the filial activities on the side of the young. The hen 'clucks,' the chicks respond by action or call. Either without the other would serve no purpose and would not survive. So we may say that in a great group of cases illustrating such modes of behavior, nature has had to provide not simply a correlation of characters within a single organism, but *as between two or more different individuals.* And we come to ask how this extraordinary state of things could have been secured. What sort of variations would be required to secure and develop native social or gregarious habits?

It is evident at the outset that the objections to Darwinism already stated would hold here with increased force. If variations affecting two or more individuals at once, and different in character, are required, what is the likelihood of their occurring together unless some effect of the actual association in life of the individuals be reflected in their heredity? And if the facts of correlation present difficulty when a single individual's behavior is in question, what does the difficulty become in interpreting correlations of characters extending to a group? The inheritance of one of the individuals would represent only a part of the required action, the other part being bound up in the inheritance of other individuals. It would seem that here we have a case in which only the actual experiences of the animal's life would give the clue to the sort of variations to be found serviceable.

The resources of Darwinism, as explained above, are adequate to meet this case also, provided we admit the operation of 'organic selection' as described, upon the joint correlations actually established in life. That is, we must hold that the actual life activities keep certain individuals alive *in associated pairs, groups,* etc., the co-ordinated actions being of utility, while the individual actions required are gradually

being molded by variation from generation to generation and fitted together for the performance of the joint function. In each generation, groups of individuals best fitted for the joint action would be formed. Coincident variations would accumulate for each type of individual according to the requirements of the gregarious habit. Thus the several types of individuals are selected with reference to their ability to play each his part 'for the benefit of the community' (Darwin, *loc. cit.*, p. 70)[1], and the whole group is selected because of the utility of their coöperation. The united function screens and preserves the individuals able to take part in it; and while thus screened and preserved, the variations toward its better performance are produced, fitted together, and selected. It is a further and very important instance of the operation of organic selection.

But here again the utility of the psychological factors comes prominently into view. The fact that each of the young, through imitation, play, etc., learns the established traditions of behavior, adds immensely to the fitness both of the individuals and of the group. The young are trained for the performance of their essential parts, and their lives are thus saved. The group having the largest and most effective tradition is selected; and with its selection, the variations are allowed which again make possible further congenital equipment in gregarious lines[2] and the decay of individual habits to allow for greater gregariousness.

[1] See Darwin's account of the instincts of ants, especially the theory of the origin of 'neutre' ants (*Origin of Species*, ed. cit., pp. 354 ff.). As in other instances, Darwin here chose the hardest possible case, as a test of his theory.

[2] Darwin, *Descent of Man*, ed. cit., p. 72, cites man's 'intelligence' and 'social qualities' as the characters which take the place of "natural weapons, so that it might have been an immense advantage to man to have sprung from some comparatively weak creature."

We may thus account for all the various perfect, partial and imperfect social instincts. Groups of animals show all possible stages in the combination of the factors of endowment and tradition. The two sorts of heredity, physical and social, work hand in hand, the latter taking the lead in marking out the direction and affording protection, while the slower processes of physical heredity follow in its wake. The resulting state of relative stability and equilibrium varies with the actual utilities of the case. In the animals, there is much organic and congenital gregarious activity; in man, the physical development has culminated in the perfected brain,[1] and the 'traditional' mode of handing down is that by which all the accretions on the mental side are preserved.[2]

Summing up our conclusions so far with reference to Darwinism in Psychology we may say:

(1) The individual's learning processes are by a method of functional 'trial and error' which illustrates 'natural' in the form of 'functional selection.'

(2) Such acquisitions, taken jointly with his endowment, give him the chance of survival through 'natural,' in the form of 'organic selection.'

(3) By his learning, he brings himself into the traditions of his group, thus coming into possession of his social heritage, which is the means of his individual survival in the processes of 'social and group selection.'

[1] Darwin quotes with approval Wallace's opinion that man is little liable to bodily modifications by natural selection, "for man is able through his mental faculties to keep with an unchanged body in harmony with a changing universe." *Descent of Man*, p. 144; see also p. 159.

[2] Certain of the general bearings of natural and organic selection in the account of social development are well brought out by Gulick, *Evolution, Racial and Habitudinal* (publications of the Carnegie Institution of Washington, No. 25).

(4) Thus preserved the individual's endowment or physical heredity is, through variation, directed in intelligent and gregarious lines through 'natural' as 'organic selection.'

(5) Individuals become congenitally either more gregarious or more intelligent for the maintenance of the group life, according as the greater utility attaches to one or the other in the continued operation of these modes of selection.

It is thus that a Darwinian foundation is laid for the more complex sciences which deal with the development of the individual in psychological and social ways.

II. Genetic Psychology

The further development of the social sciences requires the detailed working out of the methods of individual accommodation or learning. This requirement is reflected in the recent striking advances made in Genetic Psychology, which has two great branches: Comparative and Social Psychology. In both of these—that is, in Genetic Psychology as a whole—important principles have been found at work which afford further illustrations of the vitality of the Darwinian theory.

Play. In the play function recent writers, especially K. Groos,[1] have discovered one of the instruments of the highest utility in the learning process. It is believed to be a function by which immature and undeveloped tendencies and endowments are practised, in conditions which escape the actual struggle and stress of life, and so give the 'trial and error' method its full opportunity. Animals play in the line of their later activities, and so make themselves proficient for the serious struggle for existence. Both the personal and the gregarious impulses are thus brought to perfection behind

[1] K. Groos, *The Play of Animals*, and *The Play of Man*, both in English translation.

the screen of play. Play is a generalized native impulse toward the exercise of specific and useful activities. It is itself a functional character which has arisen by the selection, among the individuals of a very great number of animal forms, of variations toward the early and artificial use of their growing powers. It is a natural and powerful tendency in vigorous and growing young; in fact, it is an impulse of extraordinary strength and persistence, and of corresponding utility.

On the psychological side, a corresponding advance has been made in the interpretation of the state of 'make-believe,' which accompanies and excites to the indulgence of play. Make-believe is found in animals of many orders and is strikingly developed in the child. It leads to a sort of sustained imagination of situations, treated as if real—a playful 'dramatization'—in which the most important principles of individual and social life are tentatively and experimentally illustrated. Play thus becomes a most important sphere of practice, not only on the side of the physical powers, but also in intellectual, social, and moral lines.

Moreover, once learned, this method of experimentation by imaginative make-believe is extended, as the individual's powers mature, to the more theoretical and voluntary functions. Recent work in logic[1] and æsthetics has shown that the instrumental or hypothetical characters of knowledge—seen in experimental science—and the characters of detachment and 'semblance' in art, have their roots in this sort of imaginative forecasting of what may be or might be true.

Imitation. The impulse to imitate is the companion to that of play. It is the same sort of tendency in type—a native generalized activity. It is a sort of social counterpart to the play tendency; for by playing in imitative ways young animals are brought into fruitful and useful coöperation. The

[1] See chapter iv of this paper below.

correlation actually holds between them, indeed; animal and human plays are both imitative and social. Among the animals, both impulses seem to be largely restricted to the activities which are to come into play in adult life. With advance in the scale of life, however, and especially in the anthropoidal and human forms, both become more plastic and more intelligent, thus allowing them wider application to all the processes of learning. In the development of the human individual, these two functions, imitation and play, become the principle instruments used by nature for the development of the individual's native powers, and for leading him into the mass of culture called 'social tradition.' This latter province of imitation is taken up again below. The actual mechanism of both impulses illustrates throughout the Darwinian principle of selection by trial and error.[1]

Origin of the Faculties. Genetic psychology also teaches that in the foregoing principles we have in outline an account of the origin of the mental faculties as illustrated in the series of minds from lower animals up to man. Before man, we find the sort of 'profiting by experience' which comes with learning through trial and error, and the conservation in great habits of the accommodations thus secured. A habit is simply a tendency to do again what has once been done, whenever the slightest suggestion appears of the original conditions of action. This suggestion may come through a renewal of the actual conditions, or simply through memory—

[1] Darwin makes interesting remarks in various places on the utility of imitation, *e.g.*, *Descent of Man*, ed. cit., pp. 82, 146. Cf. also various titles cited *sub verbo* in the *Dict. of Philosophy*.

The writer's *Mental Development* contains detailed discussions of the place and rôle of Imitation. I find in what is known as 'persistent imitation' or 'try-try-again,' in the child, a striking case of 'trial and error' and learning through that process. The earliest cases of volition are of this type, and volition throughout illustrates persistent imitation directed upon ideas or ends.

whether this be a mere residual or trace of the original function, or an actual revived image. The imaging faculty finds here its *raison d'etre* and utility: it enables the animal to utilize his earlier experiences in conditions remote in time and place from the original situation.

A further step is taken when images are used experimentally or instrumentally for purposes of adjustment by trial and error, a process for which the play function affords excellent opportunity. The child playfully imagines all sorts of situations, and experiments upon them with direct utility to himself and his group.

Finally, in the operations of thought, involving adjustment to the common or 'general' aspects of things, this process of trial-and-error becomes the conscious and explicit method of progress in knowledge and conduct. Among the animals, the best authorities find this shown in a rudimentary way in the case of the higher anthropoids, which are able, on occasion, to readjust a habitual way of action to a somewhat changed situation. This has been called 'practical judgment'[1]; it is no doubt a preliminary stage in the development of theoretical judgment which uses 'general' ideas. Thus interpreted, the operations of thought or 'reason' are shown to be evolved from simple processes of accommodation which rest upon trial and error and habit. The 'general' idea is a general way of

[1] See Hobhouse, *Mind in Evolution*. Darwin gives two good instances of such procedure, on the part of an elephant and a bear, in *Descent of Man*, ed. cit., p. 86. The reader should also look up the remarkable passage (*ibid.*, p. 93–4) in which Darwin compares the dog's attitude toward dogs generally with its changed attitude when it discovers 'the other dog to be a friend,' and points out the dog's characteristic action of 'searching' for something when given the signal to search. Such 'general' actions he thinks denote abstract ideas.

acting upon a mass of details, recognized as requiring the same sort of treatment.[1]

The highest functions of thought are thus to be looked upon as experimental; they never entirely lose that reference to actual situations which shows their origin in the genetic processes mentioned. Even the supposedly native or *à priori* principles of knowledge are of the nature of postulates which have proved useful in the organization of knowledge; a point carried further in chapter iv below.

As to the actual origin of the different typical 'faculties' of the older psychologists—perception, memory, imagination, thought—we may look upon them as progressive variations in mental endowment, each having its utility, and each in turn fixed by selection. There is no difficulty in establishing the enormous utility of each of these faculties, as has been intimated above. We may suppose residual processes left by actual experiences serving in their day until established by variation in the form of memory.[2] The experimental use of memory images, with corresponding success and utility,

[1] Darwin is, indeed, right in saying that such habits of action are the active equivalents of abstract ideas; but it is still true, I think, that the dog acts spontaneously, not 'reflectively'—that is, he does not judge the case to be such and such. The dog's 'abstract' or 'general' is in a sense quasi-logical ('quasi-rational' in the old sense of that term) or 'almost logical;' the fully logical requires a recognition of the different cases as similar and the judgment that justifies common action upon them.

[2] Personally to me this Darwinian way of looking at the origin and function of memory is much more reasonable—in the present state of the actual evidence at any rate—than the somewhat obscure hypothesis of Hering (1870), taken up by Semon and Francis Darwin, to the effect that memory is an original function of organized matter, operating as between one generation and another to effect the transmission of the effects of experience. See F. Darwin's Pres. Address, Brit. Ass., Dublin, 1908; *Science*, Sept. 18 and 25, 1908; and R. Semon, *Die Mneme als erhaltendes Princip.*, etc. (1904).

would, be followed in time, by further variations, giving imagination and thought. The series of functions of trial and error, each in turn projecting its tentative schemes of knowledge, would run ahead and be followed by 'coincident' variations, which would then remain fixed as a permanent part of the mental endowment. The process of evolution of psychic function, then, in its great morphological stages, shows the same method—that of natural and organic selection—found operative in organic evolution generally.

The opposed theory, represented by the very early and theoretically complete exposition of Herbert Spencer's *Principles of Psychology*, should also be recalled: the theory which finds in the whole of mental as well as of organic progress an exhibition of the accumulation of 'racial experiences' solidified and transmitted by direct inheritance. To my mind—and I speak principally as a psychologist—the weight of present evidence, as well as that of theoretical probability, is strongly on the side of the Darwinian interpretation, as sketched above.

It may be noted in passing that, as will appear below, we do not find any reason for excepting the 'rational' and 'spiritual' part of man from this account of human genesis, in this agreeing with Darwin against Wallace. The higher sentiments and the aspects of temperament called spiritual dispositions are, so far as they are congenital, the emotional accompaniments of the great stages of knowledge. A generalized sentiment goes with a generalized thought. And so far as these are not congenital, but acquired in each generation, they belong to that great mass of socially transmitted tradition which is the spiritual treasure of the race as a whole.

The analogy is carried farther toward mysticism by Haeckel, who says, *Darwin and Modern Science*, quoting from his paper on 'Perigenesis' (1876): "Heredity is the memory of the plastidules and variability their power of comprehension."

CHAPTER II.

DARWINISM AND THE SOCIAL SCIENCES.

The Social Sciences have their foundations deep in psychology. A department of the latter is called Social Psychology, because of its recognition of the interaction of the two human factors, the individual and the social group. In Social Psychology and in Sociology the same set of phenomena are observed, but from the two points of view, respectively, of the individual's experiences and the experiences or activities of the group. Social Psychology asks what the development and life history of the individual's mind owe to its social setting, to its place and rôle in a social order; sociology, on the other hand, enquires into the traditions, customs, rites and institutions—in general, into the organizations of all sorts —in which the common social experiences of the individuals are found to issue, when viewed collectively.

Various formulas have been suggested to bring out the fundamental laws under which these two movements, individual social development and racial social organization, have taken place *pari passu;* and various attempts have been made to state the different genetic stages in the concurrent progress of the individual and society.[1] In these attempts, it is plain, the general questions of development and evolution arise again on a different plane, and require solution in view of the fact that in their nature the phenomena are not in a strict sense biological, but psychological and social. For admitting that the physical individual is subject to biolog-

[1] An instance of this is cited below, in some detail, in the chapter on Religion (vi).

ical laws, it does not follow that the psychological and social processes illustrate the same laws, nor even that the action of the biological laws may not be in some way modified with the entrance upon the field of the mental and social factors.

It is now widely held that certain of the attempts made to apply biological principles directly to social life are crude and fallacious. The attempt, for example, very current at one time through the influence of Spencer[1] to interpret social organization by strict analogy with the physical organism, is now discredited. Such a view will not stand before the consideration of the most elementary psychological principles. Each of the modern theories which attempt to define the fundamental method of social interaction among individuals —identifying it with 'imitation,' 'constraint,' 'contract,' 'social suggestion,' etc.—each of these cites a psychological process that has no direct counterpart or precise analogy in the functions of the physical organism. To say that the brain corresponds to the 'executive' function of government is as grotesque, if used for more than an illustrative figure of speech, as it is to say that the priests are the social 'parasites' and the police the social 'phagocites.' Why not go over to celestial physics and describe the sun as the 'executive officer' of the planetary system? Instead of stopping with the identification of the veins and arteries with the system of channels of economic distribution, why not go to geography and cite the rivers and canals; and having gone so far reduce economics to hydraulics? Give rein to analogy and there is no reason to stop with biology. The modes of action of mind on mind, indeed, as seen in 'suggestion,' 'obedience,' 'imitation,' 'self-display,' 'rivalry' and 'social opposition,' together with a host of other things that might be named at random with equal right, entirely elude this very superificial mode of pseudo-explanation.

[1] H. Spencer, *Principles of Sociology*.

In order, however, to get more positive light on the nature of society for the purpose of estimating Darwin's influence in this great division of the humanities, let us isolate certain of the problems which the biological and social sciences do in fact have in common, and ask whether the solution given by the biologists applies to the social and, if so, with what modifications.

These great problems are, first, that of the material or matter of social organization; second, that of the method of social organization; and, third, that of transmission—the problem of 'social progress.'

Social Matter. To the first of these questions the answer in biology is clear enough. Biological matter consists of living beings. Biology assumes the mode of organization called 'vital,' which is identified by certain marks and functional processes characteristic of life. The organism furnishes the material, and the further work of biology lies in the determination of the methods of organization and transmission characteristic of this sort of material. Biogenesis—the origin of life from life—is its watchword. Biology cannot deal with chemical and other a-biogenetic or merely 'bionomic' processes, although these underly the vital and proceed concurrently with it.

The social matter is not the same; it is not merely vital, but something more. It is mental. This is shown by any analysis of a social situation. Social 'fitness' is not measured by physical characters, but by mental and moral characters. We do not find that Mr. Howe's good looks had anything to do with the invention or the social utility of his sewing machine, nor that the success of the telephone was due to Bell's voice or lungs. A great statesman may be blind, deaf, tall, short, or bald. The social criteria of fitness are found on the side of mental endowments—ability to judge clearly, to act wisely,

and to convince others; readiness to follow social precedents and to submit to social restraint—all of them social characters *because, and only because, they are psychical.*

To be convinced of this, we have only to look back upon the evolution of mind and society together. There are indeed certain very effective and complicated gregarious instincts, which have arisen for their biological fitness and utility, and are transmitted by physical heredity. But they are contrasted somewhat sharply with the forms of human social organization. The former are fixed, stereotyped, relatively perfect and relatively unchanging; they must be performed just so or not at all. The 'animal company' has little development and little flexibility, because its organization is rooted in biological structure. But the gradual evolution of the mammals, on the contrary, shows the continuous development, as we have seen, of the plasticity which goes with mind, accompanied by the breaking up of the biological type of organization and the extension of the psychological. The growth of the mind allows the individuals to use their bodies in varied and flexible ways for the purposes of intelligent coöperation and mutual aid. As the physical type of organization decays, the mental and social type at first spontaneous, and later on reflective, advances.

It may be said, indeed, that the mind requires a brain, a highly specialized organ with biological functions; and this is true. But the function for which the brain itself, a highly organized body, is specialized, is just the one that releases many of the bodily organs from their biological fixities and restricted utilities. By the use of the brain, the organism becomes the instrument of mind; its various capacities are applied to new and varied uses. The plasticity of the brain and nerves is such that, with its increase, the intellectual and social utilities are increasingly served.

This gives, as I conceive it, a sort of selection and survival which is quite different from that recognized in the strictly biological sciences. We find that the utility to be subserved is one of conscious coöperation and union among individuals; and the unit whose selection is to secure this utility must have the corresponding characters. This unit is not the individual, but *a group of individuals who show in common their gregarious or social nature in actual exercise*; each is selected in company with certain others, who survive with him and for the same reason. Thus the selective unit, considered from the external or social point of view, is a *group of individuals*, greater or smaller as the utility subserved may require; and from the point of view of the subjective or psychic process it implies the mental attitude which brings the individual into useful coöperation. Calling this latter the 'personal' aspect of social fitness, we may define it by using the term 'socius.' The psychological unit is a 'socius,' a more or less socialized individual, fitted to enter into fruitful social relations. And the objective requirement remains that of a group of such individuals making up a social situation. These two conceptions become, then, the watchwords of our evolutionary social psychology and sociology respectively—the 'socius' and the 'social situation.'

The Socius. In the qualities of the socius or socialized individual, we have the type of personal fitness upon which the qualifications of the group for survival will depend. Only so far as the individuals of a group are 'socii,' members capable of coöperation and willing to coöperate with their fellows, will the group 'hold together' effectively, in competition with other groups. The effect of further selection, therefore, must be to fix the social characters of the individual, and, through this effect, to perfect the organization within the group, which will, in turn, fit the group as a whole to survive

in the competitions of group with group. This means that there are now two spheres of selection, one that of 'intra-group' selection, or 'social selection' proper, acting to socialize the individuals within the group; the other that of 'inter-group' selection, acting to preserve the most socialized group in competition with other groups.

In the former of these, working as it does to develop the 'socius,' there is the gradual elimination of the more individualistic characters, both physical and mental. The emphasis has been placed more and more on physical plasticity, with high brain endowment, and upon the corresponding social educability, with imitativeness, docility and self-control. Thus the average man has become a fairly socialized, properly restrained, and competent member of the group. Even the processes of social elimination and destruction are handed over to the agents of society—the police, the courts, and the hangman. In fact, so far are the processes of direct physical competition superseded by the more intelligent, but, from the physical point of view, less effective, social agencies, that even the intermarriage of incompetents and diseased persons is not only prevented; but these undesirable persons are artificially kept alive! Only the one qualification of fitness is insisted upon: the socius must live within the bounds of established social usage and convention.

As to what the properly social processes of selection and progress are, to that we are to return. Here it may suffice to note that, by the operation of selection, resulting in the evolution of plasticity and mind, the Darwinian factor of personal competition on the basis of egoistic and individualistic characters has undergone essential modification. As a general thing, in society we do not fight physically for our rights; on the contrary, we appeal for their enforcement to the constituted social agencies of the rights of all. And it is not for

individual and personal rights as such that we make the appeal, but for the rights that are socially generalized and common.

But while the strictly Darwinian principle of struggle and survival is thus revised within the group, it still remains operative upon the larger units, the groups themselves. 'Group-struggle' takes the place of 'individual struggle';[1] and as we will see below, the law of struggle or competition takes on peculiar and interesting forms in the process of social evolution itself.

The Social Situation. By this term we mean the more or less effective organization within a group, which it brings to the competition or struggle with other groups. In war, for example, and in the competition of civilization with civilization, whatever forms that competition may take on, what is necessary is not merely the fitness of individuals, but the fitness also of the type of 'solidarity'[2] represented in their social life. The poorly organized and more individualistic groups go to the wall before the more effectively organized and socialized. The society that does not suppress its own criminals need not expect to win the competitions of race with race. Corruption in administration means ineffectiveness in equipment. This has now become a commonplace of social science. It illustrates the transfer of the incidence of fitness and selection from the individual to the group, from the individualistic to the collective type of utility. But at the same time, within the group, the social forces as such are at work, selecting, educating, and refining the 'socius' of the group. 'Personal coöperation' and 'group selection,' then, become the cornerstones of the more critical and adequate social philosophy which utilizes the Darwinian principle of selection. The use of these conceptions has largely, and should completely,

[1] Bagehot, *Physics and Politics*, emphasizes this point.

[2] On Social 'Solidarity', see vol. xii of the *Annales de l' Institut Int. de Sociologie* (discussions by several writers, Paris, 1910).

supersede the application directly to society of vague and superficial biological and physical analogies.[1]

Coming then to the second of our questions under this general heading, we have to ask as to the methods of organization found respectively within and without the social group. As to the latter, we have just seen that the group becomes the unit of selection because it contains within it an effective social situation, and that selection on the basis of the struggle of group with group is its method. Waiving the further consideration of the latter aspect of the question of organization, except indeed to note its strictly Darwinian character, we may now enquire into the nature of the organization, within the group itself, which fits it to survive.

The Social Self. Recalling the fact stated above that, from the psychological point of view, it is the individual's sense of his place in a social situation and his ability to fill his place and perform his rôle in the situation that makes him a socius and a valuable member of a group—recalling this, we may describe social 'progress' as simply the advancing organization due to the more and more conscious, deliberate and effective participation of the individual in the current social life. The individual must represent and seek to enforce in his place and station the normal and conventional set of established social values. He must be a self-controlled and ready social instrument, whatever his part may be in the work of the whole. All the institutional and pedagogical agencies of society are exercised to the end of making each member an informed and conforming social fellow or 'socius.' Each man must absorb, by a long and wearisome course of instruction and discipline, the social traditions of his race and group.

[1] Darwin, in his last edition, recognized Group Selection as involving organization within the group. See *Descent of Man*, ed. cit., p. 150. He had then read Bagehot's remarkable book, *Physics and Politics* (1874), which he cites with admiration.

To this end the quasi-instinctive social tendencies of the human child, such as bashfulness, love of display, imitation and play, are of the first importance. It has been held with vigor and force that if any one impulse is quite indispensable to the training of social character it is that of imitation. Apart from the attempt to construe the essential social process in terms of imitation, narrowly understood, psychology has now vastly extended the range of psychic processes which, genetically considered, may be described as imitative in their type; and we may say that imitation—understood to include its products and derivatives as well as its mere method—is the root of the socializing process.[1] Both the individual's essential learning of what is necessary to his social competence, and also the propagation from one individual to another of what all must know, with its discussion and generalization in social institutions—all of these are kept in operation by processes which are essentially imitative. In play, too, broadly understood, we have, as has been intimated above, an engine of very great effectiveness. It is not to be confined to the merely sportive or gaming tendencies, although in childhood this has great social utility. But in the playful exercise of the faculties of discussion, in make-believe, in mock co-operation, in playful competition, playful struggle and rivalry of every sort, we have this great socializing factor doing its proper work.[2]

[1] Discussions of imitation in its social bearings are by Bagehot, *Physics and Politics;* Tarde, *The Laws of Imitation* (Eng. Trans.); Bosanquet, *Phil. Theory of the State;* Baldwin, *Social and Ethical Interpretations*, 4ed. (which contains discussions of bashfulness and self-exhibition); Royce, *Studies in Good and Evil*; W. McDougall, *Introduction to Social Psychology.*

[2] Bashfulness also passes from the instinctive stage into modesty, shame, and sexual timidity and reserve; and in self-exhibition or display many find one of the springs of art, coördinate with imitation (cf. the writer's article, 'The Springs of Art,' *Philosophical Review*, May, 1909.)

It all results in the development of a fit social self, by whatever terms we may describe and name the subordinate mental processes that contribute to the result. The individual grows to understand himself and his fellows in social terms. We have quite given up the old abstraction of an anti-social self, an individualistic and egoistic person, who was supposed to be always on the lookout for means of injuring his fellows. On the contrary, social psychology shows that the 'self' of the individual's 'self-consciousness' is, in its materials and processes of formation, thoroughly social in its origin. Each normally educated person is a 'socius,' born of social life and coming, through his early education, directly and naturally into his social heritage. His earliest judgments and his latest inventions are alike socially supported and socially tried out. He succeeds, when he does, in making himself unsocial, only by a process of deliberate self-seeking or by an equally artificial isolation, and even then nature often gets the upper hand and shows him what a poor and miserable individual he is capable of being when he seeks to dwell alone. The naturally unsocial and anti-social individuals are abnormal and exceptional cases.

The social individual, indeed, is the *product of the social life*. He embodies and stands for the type of organization which his group preserves in the struggle with other types. The body of Frenchmen, for example, must be brought up as Frenchmen, and the body of Englishmen as Englishmen, if what is distinctive in these great civilizations is to be preserved. And it is as much a part of the self-consciousness of each of these, respectively, that he is a Frenchman or an Englishman, as it is that he is personally A, the farmer, or B, the blacksmith.

Social Transmission and Progress. It is, however, in answer to the question of social progress and its method that

the social sciences find themselves obliged to make the most far-reaching reservations in respect to the application of biological principles to their material. For here we go over to the realm of the psychological pure and simple, although biological laws are assumed to have established a relatively stable basis for the characteristic operations of mind. The truth of this is shown in the status of certain great problems which are of such moment that when they are solved the more detailed questions are also answered in principle.

In the two principles now firmly established, that of the 'social inheritance' of social matter, without physical transmission, on the one hand, and that of the psychological origin and propagation of social variations in the form of inventive ideas and original thoughts, on the other hand—with these principles firmly rooted in the field of mental forces and results, we care not what the biologist may say unto us. And yet, when again, in this field, we have banished superficial analogy and the cheap deductions of the man who is bent on 'discounting' the mind, we find ourselves led to employ conceptions which, if viewed as logical instruments and philosophical principles, are those set store by in the works of Darwin.

The fact of social transmission has, in recent literature, been transformed from the mere commonplace of ordinary observation to the careful statement of social law. It is fully recognized that psychological acquirements, the results of practice in action and the acquisitions of knowledge, are embodied in social regulations and conventions, and are not inherited through the physiological organism. There is a process of actual re-acquisition from generation to generation. This does not, of course, involve actual re-discovery or the full re-living of the experiences, since that would be too laborious and haphazard. The function of society which is correlated

with the educability of the child comes in here: the function of administering, again and again, in each generation, by the agencies of instruction and discipline, the accumulated lore of the ages gone by. It becomes necessary that each child who is to run a good social race should be trained in the fundamentals of social knowledge and instructed in the essentials of social behavior. He must learn how to use the great social instruments, language, writing, science. He grows to be a 'socius', in the sense above described, by the absorption of the social tradition.

It thus appears that the great mass of essential social matter escapes the limitations of physical heredity. It is enough that by physical reproduction the fit candidate for the social heritage be provided.

Social Change and Variation. The other great requisite of progress is, of course, some source of change, of social variation, to use the Darwinian term. As in social heredity we have the conserving factor, whereby the stored acquisitions of the race are re-administered to all and so remain in available form, so here we must seek the principle of production of the novelties through which advance is secured.

Here we are again on distinctly psychological ground. In a sense, of course, the genius, the inventive thinker, is a physical variation; he comes as a child of his parents, and of his parents only. But there are two ways in which our theory of the inventive thinker must supplement this biological account of his origin. In the first place, the variations he represents are variations in brain and mind. His heredity determines them, for it is by marriage that his mental and physical hereditary strains are alike brought into union; but given the thinker, the babe intellectually well-born, the child of fortune and of future greatness, and the battle is still but half won. The social forces must now take him up and make him

socially productive. He must be trained in the matter and methods of effective thought and action. He must be normal in the main, if he is to become more than normal in his achievements and contributions to the social store. For this is the nature of the productive social variations. They are of the nature of fruitful thoughts, proposals, measures suggested for adoption by the social body. The mind of the great thinker is, of course, the first requisite to each advance made by society; but even his thoughts must be tempered by sane judgment trained in the social conformities.[1] And after all, the main movement of progress comes by the smaller accretions, the modifications wrought out by the thinking minds of lesser caliber than that of genius.

Indeed, we find reinstated here, in the world of ideas, a curious form of struggle for existence, a competition of ideas to survive. Every new thought, no matter how valuable in the result, has to pass the gauntlet of social acceptance no less than that of actual truth and availability. The individual 'particularizes' the new ideas; the common people of the social group 'generalize' and apply them. Here, as Bagehot said, the function of 'discussion' comes in. It is a sort of meeting place of ideas, the theatre of competition among thoughts and inventions, in which the fittest, the most reasonable or plausible, survive in the custom, law, and practice of society.[2] The individual mind, then, is the source of the new variations, the new items of mental production, which are of possible availability; while society is the mental and moral environment to which the new thoughts must show their adaptation. In this sense there is a real application of the Darwinian conception; but it is an intrinsic applica-

[1] See appendix A, on 'Darwin's Judgment.'

[2] Tarde uses the analogy of 'thinking' or logical process for this fitting together or assimilation of ideas in the social whole; see his work, *La Logique sociale.*

tion, operating in its own way under peculiar conditions; it is not at all the taking over of a biological principle.

The essentially *sui generis* character of social transmission and propagation of mental material in social progress suggests another difference between its working and that of physical heredity. It is evident that the extension of an idea in social acceptance and belief is not limited to certain individuals, but may run its course with any degree of celerity and completeness. A month, a week, a day may suffice for the general recognition of a new thought in the social group. And this process, instead of encountering limitations, is furthered by certain psychological motives. Beliefs are contagious, ideas run from mind to mind, imitation produces sameness and conformity to the established. All these movements, quite psychological in character, stand in contrast to the slow processes by which biological characters become established.[1] The latter must submit to the limitations and reductions of reproduction by a single pair of parents, only the one pair and possibly only the one parent at first showing the new variation. Even in the most favorable biological case, that now called 'mutation' and known by the successors of Darwin[2] as 'saltation,' in which a large or well-marked 'sport' variation appears, the character in question must still be bred into the

[1] Darwin says that a man by an act of sacrifice may through the example he sets 'do far more good to his tribe than by begetting offspring.' *Descent of man*, ed. cit., p. 149.

[2] "Strongly marked deviations of structure, which occur only at long intervals of time." Darwin, *Descent of Man*, p. 3. Galton's theory of 'sports' recognized the same instances. See F. Galton, *Natural Inheritance*. The authoritative exposition of the new theory of mutation is to be found in De Vries' *The Mutation Theory;* see also the Darwin memorial volumes. Darwin, *Origin*, ed. cit., pp. 313 ff., anticipates it and urges strong objections to it. In my opinion, as an account of the origin of species, even among plants, it is very far from being proved.

race by actual reproduction under the limitations of the laws of physical heredity.

It may be said again, of course, that this is a case of a biological law applied to sociology—a variation propagating itself because it is fit. Certainly; but the conditions and principles of such propagation are so different and characteristic in the two cases, that neither can be used for more than a suggestive analogy to the other. What is common to the two is the essential thought of Darwin's natural selection. There is a selection under conditions of over-production and this is 'natural,' the result following simply and entirely from the conditions of the competition.

We have to conclude, then, that the Darwinian principle has application in the sphere of social organization and progress. But it is not because this principle is biological, nor is it operative in its biological form. The truth is that Darwin struck upon a law of such universal application in nature, in both spheres, vital and mental, that we can apply it to much that is common to these two sciences. The differences within what is common however extend to further details in certain directions, and illustrate contrasts between the sociological and biological conceptions, notably in the matter of 'struggle for existence.' In the social sciences, this shows itself in the various forms of competition and rivalry.

Struggle and Competition. It is a remarkable fact that the idea of 'struggle for existence,' an idea which supplies an essential link in the chain of the Darwinian theory, was suggested to him by Malthus' book on population. Wallace was influenced by Malthus in much the same way.[1]

Malthus' suggestive and fruitful thought was in effect this

[1] The ever-memorable 'Essay on the Principle of Population,' Darwin, *Descent of Man*, ed. cit., p. 50. Wallace has himself described the way in which Malthus supplied to him "the long-sought clue to the effective agent in the evolution of organic species," in his *My Life, A Record of Events and Opinions*, i, pp, 232, 361.

without some eliminating agency, said he,—some 'Malthusian factor' as it has since been called—over-population would be produced and this would result in scarcity of food, the production not keeping up with the increased demand. Over-population would then result in a struggle for the means of life. Malthus pointed out various 'checks' on population by which this is prevented. Taken literally, of course, the simplest case of this would be in the animal world, where simple appetite would impel the individuals to contend with one another whenever food was not abundant. Darwin saw that this was realized in animal nature. The animals are not only constantly fighting for their food, but they are equipped with weapons of offense and defense, seemingly provided for this express purpose. And the idea is near at hand, as the case of Darwin and Wallace both demonstrate, that it is through such a 'struggle' that the fittest survive, and that the relatively well defended and strong have been evolved.

This we may consider as the strictly 'Darwinian' sort of struggle for existence; for although suggested by an economist, it is nevertheless this form of competition that finds its evident application in the relatively simple biological conditions assumed by Darwin, where the psychological factors as such do not play a conspicuous part. This we may call, understood literally, 'struggle for food' or struggle for sustenance—struggle, that is, for the means of life.

When we come, however, to broaden our outlook and to examine the examples actually given by the two great apostles of natural selection themselves, we find certain variations from this simple condition of struggle for food. Food is not all that the mere animal wants. Darwin recognized that the other great instincts and appetites also lead to struggle for their satisfaction. In his emphasis on Sexual Selection he recognized the force and critical character of the reproductive

instinct which leads to the struggle of the males for females.[1] Even the struggle for food takes on a complicated character when we recognize that the 'food' in question may be another animal; for the prey must 'put up' the most intense sort of struggle to escape. It is not struggle for food to him, but struggle to escape being made into food! It is a struggle for life with him. Indeed we find a great class of characters in nature that serve just this end, characters of defense, of concealment, of rapid locomotion, of cunning and make-believe, all providing for escape, in this form or that. Under this heading, too, we must place the struggle not against other animals, other living enemies, but against nature itself—against rigorous climate, and disease—against all the forces of the environment to which any relative maladjustment would terminate fatally. This is a 'struggle to live,'[2]

Both these cases of struggle for existence—'struggle for food' and 'struggle to live'—are illustrated in the more complex conditions with which the social sciences have to deal. Every individual who has to make his living, whether with his hands or with his brain, or with both together, is having a struggle for food. And in our fight against cold, climate and disease, we are also struggling to live. Indeed, about the only form of danger leading to struggle for existence, in this

[1] Although announced in the *Origin of Species*, the principle of Sexual Selection received more detailed treatment and greater emphasis in the *Descent of Man*, the full title of which is *The Descent of Man, and Selection in Relation to Sex*. The principle of Sexual Selection is coming into juster recognition as accounting for the 'secondary' sexual character. See Weismann, in *Darwin and Modern Science*, pp. 42 ff.

[2] Darwin discusses the human struggle for existence with reference to the Malthusian 'checks on population,' in *Descent of Man*, ed. cit., pp. 50 ff. In the *Origin of Species*, ed. cit., vol. i, p. 78, he clearly distinguishes the two forms of struggle mentioned in the text.

individualistic sense, that the modern human individual escapes is that of being eaten up by his fellow-man. Cannibalism is done away with, at least in good society. But there are mosquitoes and parasites still to feed upon us; and in the most cultivated circles we run risks of having our substance devoured even though our persons be safe.

We may say, on the whole, that the cruder forms of struggle for existence in the biological sense, the forms that depend upon physical offense and defense, are largely done away with when we come to the stage of active social coöperation. In rude societies, it survives in the indulgence of the coarser emotions and passions which are not yet reduced to the form in which they serve social use rather than private gratifications. Private revenge, for example, and lynch law remain in some communities. Some forms of direct struggle survive too on account of the countenance they continue to have in actual social sanction, during the slow processes of the evolution of the agencies of social control and law. But coöperation within the group is really the final enemy to these sorts of individualism; and we find that it is outside the group, in the realm of inter-group selection, that the struggle remains one of direct life-and-death competition. War we still have with us, and also the protective tariff, the exclusion of aliens from our food and labor markets, etc., all devices for providing for our own people regardless of what effect this may have upon other people who are in fact just as human and just as hungry as we are.

It is fair to say, therefore, that there is a progressive suppression within the group of the grosser, more biological forms of struggle for existence, progressing with the advance in social coöperation and organization; but that they still find illustration in the struggle which a social group as a unit wages with other similar units or groups. Even here, how-

ever, the struggle tends to be waged with other than physical weapons. The growth of mind, making the group organization ever more effective, shows itself efficient also in the foreign relations of the group. War and all other sorts of racial rivalry become as much struggle of wits as struggle with hands and guns. In war the sting of defeat is not measured by numerical loss of men, but by the humiliation of national pride and the loss of racial prestige. The costliness of victory contributes to the pride and glory of its achievement.

These considerations may introduce us to the form of struggle for existence which is distinctly psychological in character, and which does not allow of any sort of biological explanation. Let us call this 'rivalry,' including in it all forms of competition, both individual and social, in which psychological factors play the essential rôle.

Rivalry. The test of rivalry, so defined, is to be found in its motive and end. In biological struggle we have either the end of personal existence, ministered to by appetite, passion, and self-defense, or that of racial continuance, the end of physical reproduction. Biological coöperations, even, when strictly interpreted, have one or both of these ends. Individual animals live to propagate, and the species propagates to live. This is the circle of biological ends. The male bird does not understand the motive of his courtship antics, but the end is there just the same; the female may not know why she builds the nest, but she is conforming to racial ends. The immediate gratification of impulse and instinct forwards the biological process.

But when we come to psychological, social and moral rivalry these things are not so. In a word, social utility tends to replace that of instinct: a statement which our own detailed explanation will justify. We say to a man: 'You are, of course, an animal, *but do not allow yourself to be*

one.' We enter here upon a world of what we may call 'mental and moral motives and ends,' which are not exhausted in those of the biological order.

If we proceed to ask in what respects the social person comes into rivalry with his fellows, we find all sorts of situations which can be described only in psychological terms. He acts from motives of display, advancement, prestige, reputation, gain, happiness, honor, all terms which represent a sort of end that cannot be identified with mere continuance or propagation of physical life. Even the most directly egoistic and utilitarian conduct by which one may compete with his fellows, is partly motived by social considerations. The merchant seeks wealth not for mere food or mere life, but for family prestige and for the larger social amenities. The banker gives a fine dinner not to gratify his appetite or that of his guests, but to show forth 'his own glory,' a motive of such dignity that it was attributed to the Creator by the Westminster divines. Rivalry, then, as varied as its motive may be, is, negatively at least, so to be described: it is not exhausted by the biological struggle for existence, understood either in individual or in gregarious terms.

This appears, also, when we consider the sort of environment in which personal and social rivalry is fought out. It is not a contest to show physical fitness, to effect adaptation to physical conditions, or to meet physical tests. It is rather aimed to meet the conditions of social and moral utility. It is the environment of society itself, not that of the physical earth and its forces, for which the successful rival must show his relative fitness. He must convince men, persuade women, forecast demand, provide supply, anticipate economic and industrial movements, discount beliefs, and weigh customs. This is the arena of social rivalries and advancements. The contest turns upon the individual's personal adjustment to

social situations, upon his attitude toward social institutions and his will to acknowledge them, not upon his place or function in the scale of physical life.

Not stopping to dwell upon details, we may consider this as the essential difference between the two cases. Within the group, the rivalries are those which presuppose a social and moral order, and require motives in the individual to meet the demands of such an order. And within this order itself are to be found the criteria of fitness and selection, with the corresponding means of elimination, of the socially and morally unfit. For there is here also something corresponding to the elimination found in the biological order; *there is a social suppression of the socially unfit.* For this, society develops weapons to use against its own members. In social ostracism, the boycott, the jail, the reformatory, the asylum and the gallows, we have society's means of suppression or elimination. But this is again different from biological elimination, just as a conscious, deliberate motive differs from a blind biological impulse. We do not kill off the criminals or the insane indiscriminately in a fit of rage, simply because we are able to do so or feel so disposed; but we deliberately hang or confine them because we judge them, together with their activities and tendencies, to be injurious to society. It is not an automatic elimination, the outcome of mere struggle as in biology; it is, on the contrary, a conscious process of banishing the socially unfit.[1] The new science of Eugenics, having as god-father one of the verteran Darwinians of England, Sir Francis Galton, is founded upon the possibility of carrying further in a systematic way this intentional improvement of the race, by the

[1] It is true also, as Lloyd Morgan has pointed out, that individual conscious selection seeks positively the best, instead of merely neglecting the worst; but individual choice is so variable that this seems to be a very uncertain factor.

'artificial' selection or elimination of individuals who are respectively fit or unfit, either physically or socially. It involves the direct application to human life of Darwin's 'methodical' selection—the systematic selection by man with an end in view.

In this matter of rivalry in general, then, we find the main Darwinian method of selection and progress again exemplified, but not in a way that simply applies the biological principle to social facts. On the contrary, the principle is widened. It finds different, though analogous, application in these two great fields of knowledge. Biological struggle is the means of selection *for purposes of life in a physical and vital environment;* its conditions are those of the organic order; its qualifications those of physical fitness. Social rivalry, on the other hand, is the means of selection *for mental and moral purposes, personal, economic, etc., in the environment of a social order;* its qualifications are social and moral.[1]

I have used the word 'moral' above in a general sense, seeming to slur its distinctive import and to identify it entirely with the social. We have found a world, an environment, of physical facts and values, requiring a certain sort of fitness, and also a world or environment of social facts and values; how far, and in what sense, we may now ask, do these exhaust what is known distinctively as the world of 'moral' or 'ethical' facts and values?

[1] Similar reservations in respect to the use of the biological analogy in literary science are made in the valuable papers of Prof. J. P. Hoskins in *Modern Philology*, April and July, 1909.

Below, in this paper, p. 74 ff, under 'Community,' a further word is said on the bearing of the selection theory on the sciences of politics and government. Darwin sums up his views on social progress as follows (*Descent of Man*, ed. cit. p. 162): "The more efficient causes of progress seem to consist of a good education during youth, while the brain is impressible, and of a high standard of excellence inculcated by the ablest and best men, embodied in the laws, customs, and traditions of the nation, and enforced by public opinion."

CHAPTER III.

DARWINISM AND ETHICS.[1]

The name of Huxley comes to mind as we approach this topic. The controversy excited by his Romanes lecture, entitled *Evolution and Ethics*, will be recalled by many of my readers. One of the champions of Darwinism here deserted the colors, for Huxley held that in our 'moral sense' we have a principle of altruism and a rule of conduct that directly contravene the principle of 'struggle for existence;' morality could not have had its origin, said he, in the working of this principle, considered as issuing in the survival of the fittest.

We are now prepared, however, to find that Huxley was wrong.

Huxley did not appreciate the fact that there are stages of transition between biological struggle and social rivalry, between the physical fitness required for the one and the social fitness required for the other. So soon as we see that the fitness of the group for its struggle *requires organization within the group, and this in turn requires a socialized rather than an egoistic individual*, then the difficulty disappears. Utility for the group *presupposes self-control and altruism in the individual.* It is the extension of the application of natural selection to groups, rather than its direct application to individuals, that has given birth to morals. So the Darwinian principle is

[1] Prof. Tufts discusses this topic in the Darwin Number of the *Psychological Review*, May, 1909.

Darwin's views on the origin of morals are to be found in ch. iv of the *Descent of Man*. See his brief *résumé* on pp. 149 to 150 (ed. cit.)

preserved.[1] The theater of competitions is the social order, not the physical environment; and the interests of that order are the first and essential utilities. *Morality has arisen because it is socially useful; that is the Darwinian account.* An intelligent altruism is a better type of life for social purposes than a stark egoism; and the better type has prevailed and will prevail.

To this result several steps are found necessary; and these we may now take, using, as in the earlier sections, the catch-words of current theory: *Social Control, Self-Restraint, Altruism, Duty.*

Social Control. The preservation of a group depends upon the character of its inner organization. This requires, in the interest of the whole, the subordination and regulation of the individuals. Such regulation is what is called 'social control.' It is the control of society over its members by all its agencies, executive, educational, penal, etc. It extends to all the social arrangements: to custom, tradition, law, with their sanctions—legal, conventional, pedagogical—exercised for the constraint of the individuals and the suppression of the capricious and anti-social. The constabulary is the instrument of social control on the lower plane, the judiciary on the higher.

Self-restraint. The progress of society, however, is not limited to the merely external or repressive modes of enforcement which the exercise of direct social control alone would create;

[1] It is really astonishing that Huxley did not see this, for Darwin's own exposition is fundamentally based upon this distinction. He heads his collection of cases (pp. 132 f) with the legend, '*The Strictly Social Virtues at First alone Regarded;*' and in the discussion we find these words: "Actions are regarded by savages . as good or bad solely as they affect the welfare of the tribe—not that of the species, nor that of an individual" (p. 135).

nor is this adequate to produce morality. There is the correlated process of development, in the individual, of personal control or self-restraint. It is due, we have seen, to the social character of personal development as such. Each person is educated to be a 'socius,' self-trained in the duties and obligations, as well as in the rights and privileges, attaching to the essential social situations of life. This sort of training is reflected in the kind of sanity of social judgment which we call 'practical' or 'moral.' It requires the voluntary subordination of the individualistic to the common interest. It is not a distinct faculty; it is simply the sense of social fitness and value become habitual, natural and obligatory to the individual. It represents, on the whole, the socially useful: the type of conduct which has behind it the enforced sanctions of the social discipline and control of the race. The child's 'self,' being socially molded, is a self whose normal practice should issue in socially established channels: and this 'should' becomes, when self-legislating in the individual, his ethical 'ought.'

Apart from points of further philosophical discussion, we may accept this answer to the question of the genesis and meaning in evolution of the individual's conscience. It is a form of self-restraint and self-direction which follows upon and in turn enforces outwardly sanctioned social constraint and direction. It is the normal personal self coming into its social heritage of rights and duties and recognizing its place and status. Its ideal is personal consistency and self-direction; but its discipline and guidance are social and its rules are those produced and sanctioned by social utility. The moral genius, like the inventive genius, produces variations—in this case ideas looking toward practical reform and change—but these are selected, in turn, for their social fitness and value.

Hobbes on life in state of nature

This account of morals is, of course, Darwinian in spirit.[1] It shows the moral faculty to be genetically due to the reflection and grounding, in a socially developed self or person, of the rules of organization found fit in social life under conditions of group competition.

Altruism. The stumbling-block to Huxley was the altruism of the moral life. How can consideration of others supersede self-seeking, if a struggle for individual existence—an 'eye for an eye', a 'tooth and claw' struggle—is the rule or law of survival? But we now see that the biological and individualistic sort of struggle does not represent the method of social selection. Struggle to be or to become effective and successful units or socii in an organization of self-controlled individuals—that is the proper form of statement. This involves the voluntary coöperation of individuals in the social situation. So all the egoistic and self-seeking impulses

[1] I have elsewhere stated what I believe to be the lack in Darwin's theory, as expounded in chap. iv of the *Descent of Man*. He finds morality too early, genetically, I think, taking its roots (social instinct, sympathy, etc.) for the thing itself, and not recognizing sufficiently the higher elements of self-determination and reflective judgment which develop naturally out of these roots. I think it is the reflective determination of alternatives of conduct that distinguishes a man's 'conscientiousness,' to use Darwin's term, from the dog's.

We should hardly expect Darwin to work out distinctions which the professed psychologist and moralist find it necessary to develop. Yet in such passages as the following the true note seems to be struck. He says (*loc. cit.*, p. 126): "A moral being is one who is capable of comparing his past and future actions, and of approving or disapproving of them." It is the 'approving' and 'disapproving,' of which we wish a fuller account.

Cf. the writer's *Social and Ethical Interpretations*, Chap. ii; and see Tufts on 'Darwin and Evolutionary Ethics,' in the Darwin Number, May, 1909, of the *Psychological Review*. Other works on evolution ethics are Schurman's *The Ethical Import of Darwinism*, and (of especial value) Alexander's *Moral Order and Progress*. The social grounding of ethics is ably advocated in L. Stephens' *The Science of Ethics*.

and propensities must be inhibited in the adjustments of justice, fraternity, and right. It is the person as such, *the socialized self*, upon whom the fittest conduct must terminate and in whom it must originate, whether, in this case or that, it be embodied in one's own interests or in the interests of others. Sympathy and altruism are the socialized and transformed impulses of the growing individual, who is educated into a higher selfhood; egoism and self-love must undergo this transformation.

Duty. Duty is the sense of this requirement, as one's own socially built-up nature utters it. It is my duty to be consciously a social instrument—the representative of the socially best—the most fit person I can be; and since this is reflected in my conscience it is my duty in general to obey my conscience. But with this must go my best insight, my most informed reflection. From the point of view of society, altruism in spirit is always useful; but it is not always duty. Reflective judgment and deliberate foresight for the good of the whole—nothing short of this is one's duty.

It is not my intention to develop ethical theory here; but to show in what way Darwin's general point of view works up into ethics through sociology. Once granted the origin of society by selective processes, with standards of group-utility replacing those of biological and individual utility, and the objection to Darwinism in ethics, on the ground of its individualism, completely disappears. The norms of social utility become the ideals of personal duty, which are unconditionally imperative to the individual.[1]

We may either stop here with so much justification for the utilitarianism of Mill and Stephen and the positivism of Comte; or go on to the ethical idealism of Kant, whose

[1] As we will see below, p. 70, the logical 'necessity' of truth like the moral 'necessity' of duty, is socially established.

maxim, 'Act so that the rule of thy conduct may be fit for universal law,' only reverses the process as sketched in the passage above.[1] The Kantian says in effect: "Society absorbs and utilizes the individual's *ideals of absolute duty*"; the Darwinian says: "Society produces the individual, and informs him in what *thus becomes for him his absolute duty*." In either case, the duty of the individual is absolute in the sense that, having a sense of duty, he *must* follow its guidance.

From the point of view of science, however, new possibilities of fruitful investigation appear. It is evident that the genetic or developmental method may be applied fruitfully to the moral, whether it be considered as evolving in the social life of the race, or as developing in the moral sense of the individual. Objective or social ethics becomes a department of anthropology. It is the science of the actual rise and evolution of morals in races and peoples, and ranks with other comparative sciences ofhuman institutions. The development of the moral nature of the individual is also opened to scientific investigation in connection with that of his social nature. In both these directions the natural history of morals—and also that of religion—is being made out.[2] They both proceed, however, it is clear, upon the assumption that morality as such is natural and social, and has its developmental stages of progression both in the individual and in the race. As a distinctive mental function, its evolution takes place in connection with the history and development of man. I have therefore elsewhere described it as 'anthropo-

[1] "Act always on such a maxim as thou kanst at the same time will to be a universal law", Kant, *Metaph. of Morals*, Abbott's trans.

[2] Recent books dealing respectively with these two sorts of enquiry may be mentioned: *Ethics*, by Dewey and Tufts, and *The Moral Life*, by A. E. Davies (Review Publishing Co., Baltimore, 1909). Westermarck's *Origin and Development of the Moral Ideas* also falls within the first-named branch of enquiry.

genetic' in the one case, and in the other case, as shown in the parallel development of the individual's moral sense, as 'psycho-genetic,' both of these terms being opposed to what may, as merely vital or biological, be described as 'bio-genetic.'[1]

[1] Cf. *Social and Ethical Interpretations*, 4 ed., 'Introduction'; and Chapter vi, below, on 'Darwinism and Religion'. See also the work of Davies, cited in the last note.

CHAPTER IV

DARWINISM AND LOGIC

I.

Under the headings of 'instrumental' and 'genetic' logic[1] the evolution theory has worked its way into the discussion of the higher processes of thought. The theory that thought is an instrument for dealing with social and practical situations —for solving problems of adjustment and truth—has given to discussions of knowledge and reality a new and vital interest. All knowledge remains experimental until it is confirmed, and it can be confirmed only by a resort to trial in the domain of its appropriate application. This leads up to two very important positions in the newer logic: a view as to the nature of truth on the one hand, and a view on the other hand as to the nature of the 'laws of thought,' the so-called 'categories' in which the mind builds up and systematizes its acquisitions.

The theory of truth becomes either one of extreme 'Pragmatism' or one merely of 'Instrumentalism.'

Instrumentalism holds that all truth is tentatively arrived at and experimentally verified. The method of knowledge is the

[1] See Dewey, *Studies in Logical Theory*, and Baldwin, *Thought and Things or Genetic Logic*, two works generally cited as exemplifying the Darwinian influence (*cf.* Creighton on 'Darwin and Logic' in the *Psychological Review*, Darwin number, May, 1909, in which this and the following chapter of this essay have also appeared in incomplete form.) R. Adamson, in his work on *The Development of Modern Philosophy*, also discusses knowledge from the point of view of genesis. See also Appendix B.

now familiar Darwinian procedure of 'trial and error.' The thinker, whether working in the laboratory with things or among the products of his own imaginative thought, *tries out hypotheses*; and only by trying out hypotheses does he establish truth. The knowledge already possessed is used instrumentally' in the form of a hypothesis or conjecture, for the discovery of further facts or truths. This reinstates in the sphere of thinking the method of Darwinian selection.

Here Darwinism gives support to the empiricism of Hume and Mill and forwards the sober British philosophical tradition. And no one illustrates better than Darwin, in his own scientific method, the soberness, caution, and soundness of this procedure.[1]

Scientific method becomes, when the full implications of the matter are thought out, the exhaustive epistemological method; that is, we must hold that there is no method of reaching results to be called truths which is not found, when genetically considered, to go back to the fundamental processes of experimentation. There is no royal road to truth; no golden rule of revelation or inspiration by which the philosopher can deduce the 'universe and the contents thereof.' The ambitious *Naturphilosophie* of the last century remained barren and speculative until, through the development of experimental and evolutionary science, it became *Naturwissenschaft.*

But what shall we say of the principles of knowledge itself? Are there no final *a priori* and absolute tests of truth such as we are accustomed to find in 'identity,' 'consistency,' and 'sufficient reason'? Are there no constructive categories which do not themselves owe their establishment to experiment?

As for the categories—here again instrumentalism has its

[1] See Appendix A.

adequate reply; and its reply is strictly Darwinian. These, too, it claims, the categories, are principles which have been selected from numberless possible variations of thought in the course of racial evolution. They represent selections, adjustments to the natural situations which have confronted the mind. They are rules of systematization found useful for thought and experience, for individual knowledge and practice, and for common social belief in the vast stretches of history. The mind has built up a structure, as the body has; and by a similar method: that of tentative and experimental functional adjustment, followed up by the coincident variations of mental structure fixed by selection.

It is here that Herbert Spencer's most valuable intuition appears—a conception to be placed beside that of Darwin. The weak point in Spencer's harness, however, was his resort to Lamarckian inheritance for the fixing of the rib-structures of mind. But for the theory of knowledge, the result is the same. The most absolute and universal-seeming principles of knowledge, viewed racially, are 'practical postulates' which have been woven into human thought as presuppositions of consistent and trustworthy experience. They were 'original ideas' at some time, found to be useful for the organization of knowledge and for the conduct of life; and, now, by processes of reflective abstraction, they are set up as schemes or forms divorced from the concrete contents which alone gave them their justification and value, and called 'the categories.'

All knowledge, all thought, must conform to the law of consistency because this has become the fixed rule of safe and profitable experience.

So far we may recognize the two great conquests of the instrumental or experimental logic. It holds that *all truth is confirmed hypothesis*, and that *'reason' is truth woven into mental structure*. These two great formulations are handed

over to philosophy. Both are Darwinian. The first cites the selection of ideas for their utility in personal and social development; the second cites the 'coincident' racial selection that fixes them in the constitution of the mind.[1]

But a more radical point of view is possible. What is now known as Pragmatism proceeds out from this point. It is pertinent to notice it here, for it offers a link of transition to the philosophical views with which we must briefly concern ourselves.

Pragmatism[2] turns instrumentalism into a system of metaphysics. It claims that apart from its tentative instrumental value, its value as guide to life, its value as measured by utility, seen in the consequences of its following out, truth has no further meaning. Not only is all truth selected for its utility, but apart from its utility *it is not truth.* There is no reality then to which truth is still true, whether humanly discovered or not; on the contrary, reality is only the content of the system of beliefs found useful as a guide to life.

I wish to point out that, in such a conclusion, not only is the experimental conception left behind, but the advantages of the Darwinian principle of adjustment to actual situations, physi-

[1] In the work *Thought and Things*, vol. ii, chaps. iii and xi, the writer has published detailed discussions of the psychological processes by which practical and social postulates become, in the organization of the individual's thought, universal and rational principles. In vol. iii of the same work, this position is developed into a genetic theory of 'Intuition,' both rational and practical. On the biological side, so far as such principles have become hereditary and innate, the two possible explanations are those of 'race experience' (Lamarckian) and 'organic selection' (Darwinian).

[2] The authoritative expositions are James' *Pragmatism* and Dewey's *Studies in Logical Theory*. I do not hold these authors, however, to the statements made in my text in exposition of this chameleon-like theory. A detailed criticism is to be found in the article 'The Limits of Pragmatism,' in the *Psychological Review*, vol. xi, 1904, pp. 30 ff.

cal and social, is lost; and if so interpreted, instrumentalism defeats itself. This clearly appears when we analyze a situation involving trial and error. Trial implies a problematical and alternative result: either the success of the assumption put to trial or its failure. When we ask why this is so, we hit upon the presence of some 'controlling' condition or circumstance in the situation—some stable physical or social fact —whose character renders the hypothesis or suggested solution either adequate or vain, as the case may be. The instrumental idea or thought, then, has its merit in enabling us to find out or locate facts and conditions which are to be allowed for thereafter. These constitute a *control upon knowledge and action,* a system of 'things'. Now we may, indeed, say that nothing of what we think can be considered real except what has been experimentally discovered; but we cannot go on to say that it is the discovery that makes it real. For if that were true, what account could we give of this painstaking and often most laborious process of gradual correction and proof?—what account, that is, of the 'control' exercised upon knowledge and action by facts or things?

I know there are ways of replying to this criticism—ways of reducing the environment and its controlling facts to the level of postulates of earlier personal or racial experience. But while not finding these replies sufficient,[1] I may simply say —confining the discussion to the Darwinian text—that the method of selection by trial and error requires that relative stability, fixity and permanence be discovered in the 'control' conditions in the environment, since the genesis of truth

[1] For the reason that, when knowledge is reduced to the simplest terms, there is, *for experience itself* an unreduced something, which it takes to be in some sense 'foreign' to itself. To overlook this something, is simply and arbitrarily to abolish the dualistic presumption of knowledge, and so to make impossible any account of its genesis and development.

lies in the checking off of hypotheses under this more stable control. The truth of a thought may be discovered through its successful working; but we have to consider also the failures, the errors, and indeed the whole situation in which truth and error are alike possible.

Such analysis supports instrumentalism, but it does not support pragmatism. I may 'bring about' reality perhaps, without this external control, by 'willing to believe' in something for which I have no proof or reason, in cases in which the sort of event willed—as, for example, some one else's conduct—may be conditioned upon my act of will. But nature does not take to suggestions so kindly. The will of a general may stimulate his troops and so bring to him the victory he believes in; but such an act of the general's will cannot replenish the short supply of powder or shells, on which the issue of the battle perhaps more fundamentally depends.

In one other respect the newer view is transforming the theory of knowledge, a respect in which it shares with political and social science the impulse of Darwinism. I refer to the point of view from which the unit of knowledge, as of practice, is no longer to be found in an isolated and self-regulating individual. Covering both the logical and the political aspects of the topic by the single term 'Community,' I may discuss it under that heading. In social and political science it is community of interests; in logic it is community of judgments or beliefs.

Community.[1] Work in social psychology has greatly

[1] The two sorts of 'community' indicated in what follows are worked out by the present writer in detail elsewhere; that of the social life in *Social and Ethical Interpretations* (4th ed., 1906), and that of knowledge in *Thought and Things*, vol. ii.

modified the notion of the individual. The individual is found to be a social product, a complex result, having its genetic conditions in actual social life. Individuals act together, not alone—collectively, not singly. In short, the selective processes which have molded the individual, both racially and in his personal development, have turned on collective utilities.

When interpreted in the political sciences this discovery shatters, at one blow, the historical theories of individualism, which make such motives as personal contract, individual competition, etc., the fundamental springs of human conduct, in its social relations, and the sources of government. Instead of a social contract, there is a social growth; the only contract is the one-sided one that assigns the too individualistic thinker or actor to the jail or the asylum. Instead of government 'only with the consent of the governed,' we find government by the few or by the many *with or without* the consent of the rest. In this, and in the more 'socialized' view of human competition and rivalry, and in the new view of social transmission considered as a process which largely replaces physical heredity, both in its content and in its method, we find summed up the enormous debt that political science, together with the other social sciences, owes to researches carried out in the spirit of the selection theory. Community of interests is a fundamental fact resting on the conditions of the rise of community life.

In the theory of knowledge the same general truth appears, and it is for this reason that I place the two cases together. In the social sciences and in the theory of knowledge alike 'community' or some equivalent term, used to denote that character which is the opposite of individualism and atomism, is henceforth to be one of the watchwords. In the theory of knowledge it appears in the social reference that all knowledge implies.

For psychologists and logicians the problem now is to find any knowledge that is psychologically private, not to find knowledge that is common and public. Individual judgment and sentiment are everywhere rooted in social life—through education, tradition, convention—and it becomes a problem of knowledge, as of ethics, to show how it is possible for anyone to 'be a Daniel,' 'to stand alone.' The result is that the subjectivistic theories of knowledge, like the individualistic theories of political science, are soon to be laid away in the attics where old intellectual furniture is stored. The knower does not start out in isolation and then come to some sort of agreement with others by 'matching' his world of independent sensations and cognitions with theirs. On the contrary, he starts with what his and his neighbor's experiences in common verify; and only partially and by degrees does he find himself and prove himself to be a relatively competent independent thinker. The theory of the 'communities' or *common validities* of knowledge, and of the corresponding 'communities or *common interests* of members of society, is a new possession, due largely to the genetic researches which the Darwinian spirit and method have inspired.

"The individual", I have said in effect elsewhere[1] "is the result of refined processes of social differentiation. If he

[1] *Thought and Things*, vol. ii, chap. iii, sect. 75.

I may be allowed to quote also the following passage, summarizing the results of longer discussions, from the article 'Knowledge and Imagination,' the *Psychological Review*, May, 1908 (somewhat altered): "Knowledge is essentially and fundamentally common or social, not private. The sentence 'the individual is a social outcome, not a social unit' hits off this result. The same aspect of logical community might be hit off in the sentence 'knowledge is common property, not a private possession.' As the former of these sentences states the truth that is, in my opinion, finally to refute individualism in social theory, so the latter supplies the analogous refutation of individualism in the world of truth. The ques-

makes himself a social unit over against society, he becomes eccentric and anti-social, and his damnation is sure. So of knowledge. It begins common, stays common, claims to be common, enforces its commonness. No knowledge confined to one private head, repeated in other private heads an infinity of times, would ever become an organic system of common knowledge. It must already, in its constitution reflect its social origin and fitness. The single item of knowledge, the private self-contained thought of a single thinker, is the result of refined processes of cognitive differentiation. The private thought is not a cognitive unit; it is a cognitive outcome. The thought that claims the isolation and absolute lack of common control of an individual unit, is read off as eccentric and unreal, and its damnation is no less sure".

Valuation. From this point of view it is an easy transition from ethics and logic to the general theory of Value; and as we should expect, we find the step taken in a series of works devoted to the nature and processes of valuation.[1] If we find

tion 'how do we get together as citizens in a practical world?' is now condemned as unreal and obsolete. We *are* together and only in social life do we become relatively separate—relatively private and independent selves. So the question 'how can we know things together?' is soon to be similarly outlawed. We do not have to come together to know; on the contrary, we become only relatively competent and independent in knowing things separately. The kingdom of life does not have to naturalize or matriculate its citizens; on the contrary it is the citizen of no-man's-land who has lost his birth-right. So the kingdom of truth has no matriculation examinations; its process is, on the contrary, the separation from its body of the individual who insists on privacy and eccentricity. The normal citizen in this kingdom is the person whose conforming private judgment is at once the sign of his social fitness."

[1] See especially W. M. Urban, *Valuation, its Nature and Laws*, 1909, in which other citations are to be found. Cf. also the references given in *Dict. of Philos., sub verbo.*

it possible to construe the morally good and also the logically true as in some sense useful, then it becomes a final problem to determine what relation such utility has to the 'valuable' as such. And a moment's reflection convinces us that by leading to a utilitarian interpretation of morals and truth the Darwinian conception of survival has, in these cases at least, thrown light upon value. The valuable is that which has survived on account of its utility. Truth, no less than goodness or money or art, has its value.

When we generalize this, we make out an instrumental and utilitarian theory of value in general; that is, of value as attaching to things. A thing is judged valuable when a fitness of some sort—social, moral, economic, æsthetic—is predicated of it. This serves as basis for a detailed scientific investigation of the conditions and modes of valuation as springing from varied experiences of utility. Such utilities, established in social and individual experience, come by appropriate genetic processes to be reflected in the rules or 'norms' of the 'practical reason'.[1]

It is evident, however, that in its criterion, value is in some sense immediate; that is, value is such for the subject or group in whose experience the utility springs up and develops. The final test of values of all kinds—understood as attributions of fitness—is found in the peculiar satisfaction given by the experiences into which these values enter. This is directly opposed to the 'formal' theory which holds that standards of value, as of truth, are apprehended intuitively apart from experiences of utility or satisfaction.

It is possible, with value in general—as with moral value, as indicated in an earlier passage above—to go on to the recognition of a point of view from which all empirical values, as now defined, are harmonized in a perfectly satisfying

[1] See the first note on p. 71 above.

and, for experience, 'absolute' worth. In this sense the present writer finds æsthetic experience of absolute worth: it is an experience of complete and immediate harmony of values with values, and of values with truths. But this should not be understood as recognizing absolute worth as something established apart from the experiences of life.

CHAPTER V

DARWINISM AND PHILOSOPHY[1]

In coming to a conclusion as to the influence of Darwin's thought on philosophy, we should first sum up the general results of Darwinian views in the different branches of knowledge with which philosophy deals. If we look upon philosophy, as many do, as simply the broadest and most unified view that we can get of the world as a whole, it is evident that our task will be to set together the results of the more partial disciplines; the results reached, that is, by the sciences of fact and value. This leads to the body of theory embraced by philosophy. Accepting this as a general statement of the problem of the content or matter of philosophy, a preliminary question arises—that of philosophical method. By what method should philosophy proceed?

Philosophical Method. In an earlier address, in which the history of psychology was briefly outlined,[2] I took occasion to point out that an epoch in the progress of that science was inaugurated with the absorption of Darwin's point of view; and this because it produced a revolution in psychological method. The following quotation from that paper (slightly revised) may serve to introduce the topic:

"The rise of the evolution theory in biology supplied the direct motive to a genetic psychology. Lamarck himself

[1] For an able discussion of this topic, see Höffdings paper in the Cambridge volume, *Darwin and Modern Science.*

[2] *Proceedings of the St. Louis Congress of Arts and Science,* printed also in the *Psychological Review,* vol. xii, 1905, pp. 144 ff.

recognized the psychological factor in one of his general principles—that in which he pointed out the function of mind, by effort, struggle, etc., in modifying the organism to accommodate it to the environment. The explicit application, however, of the Lamarckian theory to the mind was due to Herbert Spencer in whose work we recognize a conscious attempt to work out an evolution theory of mind, as a branch of general cosmology. But it was in the same generation, indeed in the same decade, that those other Englishmen, Darwin and Wallace, gave to biology and psychology alike an impulse which has established a genetic science. For Lamarckism is not sufficiently 'positive'; it lends itself to the obscurities of 'vitalism.' Only in Darwinism did a thorough-going positivism of method supplement and correct the partial naturalism of Spencer and Lamarck. The contribution consisted in extending to the mind the methods of positive and comparative research, and the formulation of a principle, that of natural selection, which established genetic continuity and on the basis of which research could be directed and controlled. It is somewhat remarkable that Lamarckism never secured the hold upon the mind of psychologists that it did upon those of biologists; and the progress toward Darwinian positivism has had much reinforcement from workers in our science.

"Now—at the beginning of the twentieth century—the genetic principle is coming into its rights. It has done most service hitherto negatively, through antagonism to a psychology exclusively associational, on the one hand, and to one exclusively structural, on the other hand. Associationism was debtor for its 'structural' concept to physics; it was a positivism of the atomistic or a-genetic type. Later psychology is debtor, for its 'functional' concept to biology; it is a positivism of the developmental or genetic type. However fruitful the atomistic, structural psychology has been, it has had its word,

and it is not the final word. A great era is upon us of research by the treatment of consciousness as a thing of functional evolution in the race, and of personal development in the individual. The general psychology of the future has been prepared for in the physical mode of psychologizing, just as the general biology of the present was prepared for, by the anatomical science of life which preceded it."

Psychology has always been the vestibule, as it were, to philosophy, and advance in the latter never gets far beyond that of the former. So when psychology adopted seriously a naturalistic and positivistic method—the method, that is, of the positive sciences of nature—philosophy had also to recognize the generality of these points of view. Philosophical truth, like all other truth, must be looked upon as truth about nature—the nature of the world and the nature of man—and its progress is secured through reflection exercised under the control of the positive instruments and methods employed in those subjects. Purely deductive, speculative and personal systems of philosophy may be useful as gymnastics and profitable as sources of individual fame; but the genuine progress of philosophy is to be looked for only through those methods of confirmation and proof which control the imagination and permanently satisfy the logical and other demands of common reflection. There may be different philosophies, but, like rival scientific hypotheses, each must show the array of facts, aims, motives, values, etc., that it can explain better than any other. Philosophy is not an exercise of preference, but an exercise of reason!

In these directions Darwin has strongly influenced modern philosophical thought; so strongly that the historical issues of philosophy have taken on new forms, which, in the new names now in vogue to describe them, are unfamiliar to the old-school philosophers. Instead of the problem of 'design,' we

now have discussions of 'teleology'; instead of the doctrine of 'chance,' we now have the 'theory of probabilities'; instead of 'fatalism' and 'freedom,' we now have 'determinism' and 'indeterminism,' variously qualified; instead of 'God,' we hear of 'absolute experience;' instead of 'Providence,' of 'order' and 'law'; instead of 'mind and body,' of 'dualism or monism.' Not that all this shifting of emphasis and change of terms are due to Darwin; but that they are incidents of the newer antitheses current since the mind has been considered as subject to 'natural law,' and the world, including God and man, as common material for science to investigate. Scientific naturalism and positivism are methods of unlimited scope; and the question of philosophy is, what does the whole system of things, of external facts and of human values alike —when thus investigated—really turn out to mean?[1]

Design. I may illustrate this by considering more fully a central problem—one common to biology and psychology alike, and one whose answer colors the whole of one's philosophy. It is the old problem of 'design,' giving rise in biology to theories of 'special creation' and 'chance,' and now discussed, alike in biology and psychology, in the form of questions of 'vitalism' and 'teleology.' In what sense, if any, is the world—and in it, life and mind—an ordered, progressive and intelligible whole? And if it is such in any sense, how did it become so? Is it due to intelligence?—and if so, whose intelligence? The most violent controversies aroused by the publication of the *Origin of Species* were let loose about this question. To Darwin's opponents 'chance,' 'fortuitous or spontaneous variation,' was to take the place of intelligent creation, Providence, God. If there be no rule of selection and survival save that of utility, and no source of the useful save the overproduction of chance

[1] The terms naturalism and positivism are here used as descriptive of methods only, not of philosophical systems.

cases, where is the Guiding Hand? Does not Natural Selection dispense with a ruling Intelligence altogether?

We have only to understand the present-day statement of this problem to see the enormous concession to naturalism which the theory of Darwin has forced. Instead of 'chance' in the sense of uncaused[1] accident, we now have the notion of 'probability,' a mathematically exact interpretation of what is only to superficial observation fortuitous and capricious; instead of an interfering Providence, we have universal order born of natural law. And it is within such conceptions as these, *now taken as common ground of argument*, that the discussion of teleology is conducted. The world is no longer thought of as a piece of mosaic work put together by a skilful artificer—as the old design theory looked upon it—but as a whole, a cosmos, of law-abiding and progressive change. A philosopher who knows his calling today seeks to interpret natural law, not to discover violations of it. The violations, if they came, would reduce the world to caprice, chance and chaos, instead of providing a relief from these things.

So Darwin's view, while administering a *coup de grâce* to theories of chance and special creation, both equally desultory, capricious and lawless, replaced them once for all with law. It indicated the method of operation by which the pro-

[1] Darwin himself described 'spontaneous variation' in these words (*Descent of Man*, ed. cit., p. 49): "provisionally called spontaneous, for, to our ignorance, they appear to arise without any exciting cause." Darwin, however, was far from holding that they were uncaused or actually fortuitous, The claim is sometimes put forth by those who hold to 'determinate' variations and 'self-directed' evolution (Orthogenesis) that their view replaces chance with law. See Osborn in the memorial volume *Fifty Years of Darwinism*, p. 225, 241. But unless some cause can be shown for the supposed determinate variations, the assumption of these only replaces the law of natural selection, and the laws by which variations are actually produced, by new forms of vitalism and mysticism.

gressive forms of nature are evolved in stages more and more ordered and fit. The operation of such a law is no less and no more 'rational,' no less and no more 'fatalistic,' no less and no more 'atheistic,' than is that of any other law, physical or mental. What law—meaning simply what regular method of change—is operative in nature? and what is its range, as compared with other such laws?—these are questions entirely of fact, to be determined by scientific investigation. And how far the method or law called by Darwin 'natural selection' goes, what its range really is, we are now beginning to see in its varied applications in the sciences of life and mind. It seems to be—unless future investigations set positive limits to its application—a universal principle; for the intelligence itself, in its procedure of tentative experimentation, or 'trial and error,' appears to operate in accordance with it.

Indeed, it is in connection with this question that we are beginning to see how intelligence may, and does, work within the limits of law, effectively doing its work without violating the universal natural order. The statistical treatment of cases by newer methods[1] shows that events due to intelligence, on the one hand, and those observed to fulfil law, on the other hand, fit into the same curves of distribution, if a sufficiently large number of cases of each be taken for treatment. Events involving social and voluntary factors—phenomena of crime,[2] the size of families,[3] etc., each for itself depending upon the intelligent and free choice of individuals—when taken in the mass, follow the same laws of number and variation as do purely physical events in which there is no element of conscious determination. In a given community the annual number of suicides is as constant as the number of deaths

[1] See especially K. Pearson, *The Chances of Death*, vol. i.

[2] Cf. the works of Morselli and Durkheim, on 'Suicide.'

[3] See Pearson, *loc. cit.*

by accident. If this is so, we need not suppose any essential difference in the results in the long run; and we may take our choice as between a purely mechanical interpretation of all the cases, or an interpretation of them all as involving a deeper and more immanent principle *which works by either method or by both*. In other words, it is not a teleology of the human type, operating individually and tentatively against nature, that our philosophy must recognize; but mind in the larger sense of a principle whose mode of operation is in and through the reign of natural law. This gives to natural selection the dignity assigned to gravitation or any other cosmic principle, provided such universal range be finally assigned to it.[1]

One other instance may be cited to show how the evolution theory is serving to bring about a revision of the older philosophical conceptions. The notion of 'cause,' as held by the earlier, more dualistic philosophies, has been transformed with the advent of a broader naturalism.

Cause.—Among the objections to Darwinism, in the early days, was one that held that natural selection left no place for 'freedom' or intelligent initiation, but reduced all the sequences of nature to the level of 'cause and effect,' interpreted as a mechanical principle of the transfer of physical energy. It appeared that all movement, the entire dynamic and genetic aspect of nature, was reduced to a series of compositions and re-compositions, of transformations and re-transformations, of a certain physical or energetic stuff. 'Matter in motion' was the formula of 'cause and effect.'

In the recent developments of the theory of science, however, we begin to see how to make articulate our protest against this most superficial generalization. 'Cause' is a

[1] Further discussion of teleology is to be found in Appendix B.

broader conception than 'energy.' Only when *quantitatively considered* are natural sequences exhausted by mechanical changes, and *qualitative differences* are as universal and natural as are *quantitative identities.* There must be a revision of the notion of causation, to allow for the qualitative growth processes of life and mind, for the new modes of qualitative appearance that the genetic or developmental series of changes show. All vital, mental and social series of changes are of this sort: they are really dynamic, genetic. A psychological effect is not 'equivalent' to its antecedent conditions, considered as its cause, nor in any way identical with them in a quantitative sense. In what sense can we say, for example, that a choice is 'equivalent' or 'equal' in energy to the antecedent motives of the agent? In what intelligible sense can an organic adaptation, upon whose utility the subsequent cause of evolution possibly depends, be said to be a mere transformation of energy, equivalent to the mechanical forces that condition it? Granted that so far as it is quantitave, it does follow the physical law, we still claim that the qualitative aspects are also there and must have their own interpretation. In many cases of natural sequences we have to deal with this added aspect of change—with genetic change, with growth and organization. We observe qualitative not merely quantitative phenomena, modes of appearance and organization, not mere units of energy; and we must recognize the making of new modes of quality in every genetic movement of nature. *Nature achieves novelties;* there may be, qualitatively speaking, *more or less in the effect than there is in the cause.*

This position is forced upon us by the radical acceptance of evolution. Spencer tried to subject the whole evolution movement to the mechanical conception of causation; and he failed most signally. He interpreted all development in

terms of successive transformations of energy. Thus life and mind alike were eviscerated of all their richer meaning. So soon, however, as we give genetic change a significance as fundamental as mechanical change, we reach a very different result. Every genetic change ushers in a real advance, a progression on the part of nature to a higher mode of reality. *Actually new things—novelties—are daily achieved in life, mind and society*; results which we can not interpret in terms of the mere composition of the elements involved. We cannot predict, for example, the opinions of a group by adding together the convictions of the individuals of the group. Similarly, the outcome of organic growth and of psychological synthesis alike could not be predicted from the most exact knowledge of simple organic or psychic 'elements', if we did not already know in this case or that what to expect. The entire circle of ideas of 'energetics' is foreign and artificial to these genetic modes of organization.

Mechanical causation, physical energetics—these are, in very fact, the poorest and least interesting aspects of nature. They are instrumental conceptions, fruitful in science; but along with the processes which these concepts generalize, go the dynamic, genetic, evolutionary modes of condition and consequent, which are equally actual and, in a comprehensive philosophy, infinitely more significant.[1]

The objection, then, that Darwinism reduces life and mind to physics, is quite beside the mark. On the contrary, the very radicalness of Darwin's conception, in forbidding any compromise with vitalism, accidentalism and all forms of obscurantism, has compelled the recognition of progressive

[1] This point of view is developed by the writer under the heading 'Theory of Genetic Modes' in *Development and Evolution*, chap. xix; it is forcefully presented also by Professor H. Bergson in his work, *Évolution créatrice*.

movement, of real evolution, as of the profoundest essence of nature. The reign of physical science and of mechanical law over the scientific and philosophic mind is over now, at the opening of the twentieth century. We have been hypnotized by the term 'energy' long enough.

These illustrations may suffice to show with what stones modern thinkers are laying the foundations of a new philosophy. I may not now develop the matter further, since my topic has its limits in the influence of Darwin. But it is easy to see that with the conception of an immanent principle of change, issuing in modes of reality which are progressively more and more significant for the demands of intelligence and life—the way is open for an interpretation of the world in terms of an organization of which *progressive self-integrating experience* is the type.[1]

It is sufficient in this place to have shown, that in the working out of such an interpretation, the naturalism of Darwin has been and will be an important factor.

If, in conclusion, a brief statement were called for of the sort of influence Darwin has exercised on philosophical thought, I should sum it up in somewhat the following terms: Darwin gave the death-blow to uncritical vitalism in biology, to occultism in psychology, and to mysticism and formalism in philosophy. Each of these, alike progeny of the obscurantism of dogmatic thought, has in turn yielded before the conception of natural law and order embodied by Darwin in the theory of natural selection. This in turn requires the radical acceptance of a genetic or dynamic view of the world.

[1] It should be remembered that Hegel attempted systematically to incorporate the idea of development in a system which is radically idealistic in character.

The theory of natural selection is to be accepted not merely as a law of biology as such, but as a principle of the natural world, which finds appropriate application in all the sciences of life and mind.

CHAPTER VI

DARWINISM AND RELIGION[1]

The growth of a positively scientific and naturalistic method of enquiry in the mental and moral sciences, and of the historical point of view in the political and social sciences, could not fail to show itself, also, in the study of the phenomena of religion. The topic, it is evident, is open to approach from the side both of historical and of psychological science. We find, accordingly that the analytic and formal methods of studying religion, which have been so long in vogue, have in recent years yielded to what is known as the 'genetic' method. This latter concerns itself with the study of religion in its development in the individual and its evolution in the race.

This study, as now-a-days prosecuted, takes on, as I have just intimated, two great forms, in both of which we find the further carrying out of the influences already characterized as Darwinian.

I. *Anthropo-genetic study*:—the study of the modes or forms of religion viewed historically, racially, comparatively. It comprises the historical investigation of religion in all its forms, considered as a social institution, and as a factor in the evolution of human culture. It is an important chapter in Anthropology.

II. *Psycho-genetic study*:—the study of the modes, stages, objects of personal religious experience as such. Its prob-

[1] Revised text of a paper presented to the Fourth Inter. Cong. of the Hist. of Religion, Oxford, August, 1908, under the title 'The Genetic Study of Religion'.

lem is that of the development of personal religion in the individual: a problem of Psychology.

The former of these branches of the genetic study of religion may be called the Comparative Science of religion, the latter its Genetic Psychology. And to one who entertains both these points of view, finding interesting conclusions established in both fields, the further important question arises as to the relation of the two sets of results to each other. There must be, indeed, a comparison and correlation of the results reached respectively by the historical student, on the one hand, and the psychological student, on the other hand. Anthropology and psychology are thus brought together in the genetic investigation of one of the most important of our human interests.

I wish in this brief chapter merely to point out that there are certain very interesting points of correlation already established and that these are the fruits of the genetic method pursued in the spirit of Darwinism. The results of genetic study in the one field, that of psychology, has confirmed some of the most remarkable generalizations reached in the other, that of Anthropology.

I

In the first place, however, a word is necessary as to the relation of these two great fields of inquiry to each other. When they are viewed genetically, it is evident that they are not really two fields, two sets of phenomena. The series of anthropological facts, when traced in their development in human history, from the more primitive to the more developed stages of religious culture, must of course be interpreted by the actual religious experience of individuals at the several stages. Each religious institution, at the time it was alive, required men having vital religious experiences

of a particular sort. The recognition of this enables us to establish a canon of anthropological research, to the effect that no result of such research can be finally made out, in the interpretation of a given set of facts, unless the psychology of the group or tribe in question be such as to support and confirm it.

For example, the contention that an 'idea of God' as a being 'ethically perfect', or 'metaphysically infinite', is present in the crudest religions, is refuted when we remember the simple fact, established by psychology, that the religious experience of individuals, in the primitive stages of culture, does not contain such an 'idea of God.' The view, too, that the object of religious worship is always a 'spirit', requires that we make a new definition of 'spirit' for each of the stages of religious experience which we find to be ever more crude as we trace the history backward. Could such or such an object of worship, conceived in spiritual terms, have been present at the particular stage under investigation—that is the question it is necessary to ask in each case. And it is the psychologist who must give the answer.

The reverse is also true. Vital religious experiences issue in typical modes of religious life, and embody themselves in institutions, which the anthropologist is called upon to study. The psychologist, tracing out the development of the type of experience he calls religious, must constantly recognize the checks afforded by anthropology. He cannot, for example, rest content with an individualistic theory of religion—the view that religion springs up in the individual in the form of rational insight or private intuition—in the face of the conclusion drawn from comparative and anthropological study, to the effect that religion is, in its origin, always social—always an institution of gradual evolution, embodying the results of social intercourse, and showing a certain unity

of personal motive and practice among the individuals of a community.

These two sciences indeed, share the demand made also upon other sciences in which both individual development and racial evolution are under investigation. Social life, at any stage of racial evolution, cannot be held to embody principles of organization, nor to comprise institutions, for which full ground cannot be found in the personal growth and capacity of the individuals of that group at that time. On the other hand, psychology cannot hold that certain types of thought and life were current in any group of peoples unless the anthropologist in turn actually finds institutional or other evidence of such experiences, as historical fact. Personal experience can never release itself from the bond to racial culture which gives it its necessary environment and support. In the case before us this means that a religion is always the embodiment of the actual *religious experience* of individuals of a certain grade of culture, while religious experience in turn is always a personal interpretation of an existing religion. Not only religious conformity, but also religious revolt, involves the assimilation and re-interpretation of what is found in actual religious institutions.

In their nature and order, therefore, the stages discovered in the development of the personal religious experience of individuals coincide or concur, in a large way, with those discovered in the history of religion itself.

It is not my object, however, to dwell upon these rules of scientific procedure, nor to illustrate them in detail. They show, however, the *rapproachement* between these two sciences, brought about by the evolution theory. I wish, on the contrary, to pass at once to my main point—which is that the method is justified by the striking parallelism or concurrence of results in these two relatively independent fields.

I may now proceed to cite cases of such parallelism or concurrence. They are all well established, as I believe, by recent studies in psychology and anthropology.

II

It is necessary, at the start, to state certain of the results of historical study—comparative 'anthropo-genetic results'—as a basis for the selection of our psychological data. I think the following general statements will be widely accepted by anthropologists and students of comparative religion; if not just in the form here adopted, still without essential modification of meaning.

1. There is *no one form always assumed by the object of worship*, no single embodiment of deity common to all religions. The form of the object of worship is subordinate to the meaning given to it in the intention of the devotee. The actual object—the content 'presented' or set up before the mind, to speak in psychological terms—varies from the crudest physical and inanimate objects up to the highest abstractions of thought and the noblest creations of art.

2. What is common, on the other hand, to all objects of religious veneration is *their symbolism*, their meaning as bearing the further interpretation given them by their religious use. There is no fixed religious 'idea,' but rather a common way of treating various ideas in thought, feeling and intention. Objects of many sorts fulfil in common a group of personal and social demands which we describe as religious. What all 'gods' have in common is their meaning for the worshipper, whereby they afford appropriate ends or termini for his attitudes and dispositions of worship.

3. Religion is found to be everywhere essentially *a social phenomenon*, an institution of first-rate public significance in its time and place. Religious rites are bound up with—

originate in or with—give value to—a great body of conventions, customs, traditions, laws. The religious sanctions, the rewards and punishments prescribed by religion for certain types of conduct, are earlier in social evolution than the legal and ethical sanctions. In primitive culture, the temple is the *locus* of social authority, and the priest is the executive of the social will. Moreover, religious authority remains the court of final appeal, which interprets and develops the growing body of social tradition, and adds by its decisions to the mass of social rights, duties, privileges and beliefs.

4. The embodiment of the religious meaning, what we have called the 'content' of the object of religious worship, the deity, *is always personal* or quasi-personal; that is, it always has for the worshipper the significance of an agency *like himself.* However dead the mere thing of worship, the image, the fetish, the work of art, may be, it still means a center of behavior which may be taken to indicate an attitude on the part of the God toward the worshipper.

These are results established by anthropology for which we may seek confirmation in psychology. They stand out as features of the historical movement of religious evolution, when we look at its longitudinally progress through the ages. They apply to all the stages, and become the differentia of the movement: so that, by applying these criteria, we can define a movement of culture or an institution as religious. We may sum them up for our present purposes somewhat in this way: religion, historically considered, is, (1) a mass of developing meaning or tradition more or less successfully embodied in a series of objects, ideas and beliefs. This mass of meaning is (2) socially derived, established and preserved. For the individual (3) it takes on the form of a personal god, correlative with his own personal self, and developing in his experience with the growth of his own personality.

III

If these things be true—if religion is *what the gods mean to the worshipper*—if this meaning is social and personal, fulfilling a demand that arises in the development of the individual as a person—if these things be true, then as psychologists we should find most interesting 'concurrences' between these results and our own. To show that this is the case we will now consider in turn certain results reached in genetic and social psychology; and then go on to show their bearing in the present connection.

The question for psychology, of course, is the broad one, what is religious experience?—is it the sort of experience, in the individual, that could and does embody itself in the social institutions described by anthropology in the foregoing terms? Is religious experience, in short, what it would be if the anthropologists are right in their definition of religion? Let us enquire broadly then what the psychologist of today has to say about personal religious experience.

A truth common to the genetic and social psychology of today, is embodied in the statement that the development of self-consciousness in the individual is not a private movement, circumscribed by the single person's mind. On the contrary, this development is social to the core. It involves, as we have seen on an earlier page, intercourse with other persons. It is through the imitative and other give-and-take processes proper to all education that the individual's thought of himself in personal terms is built up. The consciousness of self is not an intuition, a bit of rational insight, shot into his mind, as so many seem to think. It is gradually formed through social experience with other selves; it is at first crude, imperfect, and subject to many illusions. Only gradually are the boundaries of the single self marked out

and the limits of one's own 'self' determined. And this content, thus socially derived through intercourse, is read again into each person of the social group in the terms in which the individual is able to conceive it of himself; only to be read again into himself, with the added knowledge derived from his attempt to understand others. The resulting self, the self of self-consciousness, is what we have called above a 'socius,' a companion, a self-among-selves, a self that maintains a life of give-and-take, of intercourse and mutual reaction with others in a series of social situations. Each such 'socius,' by his very apprehension of himself, apprehends also the relationships which give him his social status and place.

If this is the nature of the thought of self, its materials being common to many individuals alike, then the dispositions, emotions, and attitudes characteristic of the self will be the same, or similar, toward persons; that is, these dispositions and attitudes will be not private and individual, but common and social. They will attach to self-in-general—to your, my, him-self. My fellow-feeling for one in pain, for example, will show itself as naturally for you in the form of sympathy, as for myself in the form of grief and self-love. So with all the personal emotions and passions. They do not belong to an isolated person, who considers his own interest alone; but to a 'socius', a companion, who thinks along with himself of all the other selves as well.

The first result to be noted, therefore, in the consideration of the psychology of personality is that the individual's development is dependent upon social relationships, and his attitudes toward his fellows in these relationships—sympathetic, altruistic, social—spring up naturally with his knowledge or thought of himself.

Again, second, we find, in the development of the sense of

self that there are two contrasted poles or points of reference which stand out in more or less contrast in all the situations of life. There is, on the one hand, the individual personal self, the 'ego,' in which the material takes on the form of 'my-self:' and on the other hand, there is the self of the other person to whom the ego stands in relation—called the 'alter,' or 'other-self.' These two seem, on occasion, to be in rather strong contrast to each other, and the question arises whether the statement of this state of relative opposition between the 'ego' and the 'alter' does not contradict the statement just made to the effect that the self-thought is one.

The solution of this apparent contradiction leads us to a third psychological position in the statement of which we come back to the topic of religion again. There are in every mind—the child's, say, when he thinks of himself as being in a given situation with others—not only the two contrasted selves, facing each other and urging, possibly, their opposing interests; but also, in addition, a sense of the presence of a possible 'good self,' a higher or ideal personality, whose decision would be, in all cases, the proper and correct one. This is what is called the 'ideal self.' It is the germ of all experience properly called moral or religious; and its importance warrants our saying a little more about it.

In all the progress of the mind, the imagination is the instrument of learning and discovery. There is a constant projection of our meanings by the imagination, a reaching forward, in the way of assumption and hypothesis—the attempt to imagine and forestall what is still to come. In this way many of the problems of actual life are solved in advance by the imagination. All experimentation, in science and in practical life, depends upon this, involving as it does, the imaginative building up of hypotheses and their testing to find out whether, as matter of fact, they work.

In this way the imagination is submitted to the control of fact or truth. The external world becomes a 'control' of knowledge, regulating the use of imagination; and the world of persons becomes the control of the imagination is the sphere of personal interests, desires and achievements.

This movement of the imagination takes place also in the sphere of the personal self. The imaginative projection of personality takes on the form of an ideal self, a person for whom the contradictions and struggles of the actual opposition of selves do not exist, the person who knows all, who is perfect, who furnishes, in the world of ideal truths and values, the control of the imagination. Just as there is an ideal truth by which the imagination of things and events is to be controlled, and also an ideal goodness by which the practical strivings and relations of life should be controlled, so finally there is the ideal personality, which includes the partial and contrasting selves of our actual lives. This ideal, the ideal self, is 'God.'

God is a construction of the imagination, beyond the concrete single cases of self-hood that we know: it is an ideal set up and considered as actual. Considered as a factor in experience, God is the supposed or imagined Self, which is the outcome of the self-movement toward perfection—the control-meaning anticipated by all the partial adjustments which finite selves effect to one another. As the ethical demand or postulate is one of a completed social order, and its ideal one of harmonious practical relationships in a social community; so the religious demand or postulate is that of a perfect self, a fully realized or complete person, in whom the opposition between private and public interests would be completely overcome.

These two ideals, the social and the religious, it should be remarked, are correlative to each other. The perfect social

order requires the morally perfect individual; and the perfect individual could arise only in the midst of a perfect social order. They indicate one and the same ideal, when differently approached. Both represent the movement of the growth of the self—one toward practical adjustment, the other toward inner perfection, harmony and tranquility.

With this brief statement of the bearing on our topic of recent psychological theory as to the growth of personality, we are prepared to see in what manner it confirms the teachings of anthropology respecting religion.

Psychology, in fact, by the establishment of this view of the social character of the self and of its development in the realm of ideals of morals and religion, confirms at one stroke certain most interesting results in anthropology. Let us turn now to the points of harmony or concurrences between the two sciences.

First, we have seen that, for psychology, the ideal self is an interpretation which arises naturally and normally in experience with the growth of the personal consciousness of self. It is relatively crude or refined in its meaning, according to the stage of development of the self. The ideal develops *pari passu* with the actual self.

This, it is evident, is in full harmony with the anthropologist's finding to the effect that the meaning cherished by religion is not identified with the mere object that bears it, but is always symbolic; and that this meaning varies with the stage of culture and the type of social life of the tribe or group. Now it is a crude 'animation' or 'personification;' again one of nature's forces or typical operations is made vaguely 'spiritual,' as the agent of vengeance or aid: again, in the higher reaches of culture, a work of art is made to symbolize the religious mystery; and yet again the object takes on the form of a rational system of beliefs. All this

shows a real evolution in religious experience, proceeding concurrently in the individual and the race—appearing not only in the symbolic meaning, the personal intention, which spiritualizes or 'personalizes' the framework of ideas of objective symbols, but also in the choice of the things, ideas, concepts, symbols which serve as framework. There is a progressive refinement, both in the idea, the divine object, and in its spiritual meaning.

Second, the social character of religion, as made out by anthropology, finds its explanation in the social nature of the self, as discovered by psychology. There is here also a striking case of harmony or concurrence between the two sciences.

It appears in this way: the ideal self or deity to the individual, is the further carrying out, in the imagination, of the self-meaning; and this includes other individuals as well as the personal self. It is the ideal of a group, of a set of social relations, showing practical and moral oppositions, embarrassments and achievements. It is not the ideal held by other tribes and races. The deity shows the growth of the normal social relations, and reflects their character, because he is the projected personal ideal of the group. While the deity must be thought of by these individuals as apart from them, since he is personal, yet he is the controlling spiritual presence, the voice, the oracle of the group, and may be approached through the proper mediation with rites and ceremonies. The tribe's deity is in this important sense, then, the tribal spirit; he is conceived in terms of the tribal self. The ideal that hovers over the personal self of the individual and impregnates his spiritual life, is one with the tribal or national self-consciousness. 'Great is Diana of the Ephesians' is not only a formula of personal religious experience; it is also a proclamation of civic or national unity: and both

are possible in one because, in the process by which the individual idealizes his life in community with others, he also in common with them, erects a communal or national ideal. "The perfect self," he might say, "which I should attain, is the same as that which you also find you should attain; and it is the same that we both imagine as our national spirit, patron, or God. Deity may always be taken, therefore, to reveal the communal ideal of personality, as that develops continuously, while, at the same time, it supplies the appropriate object for the individual's personal worship.[1]

Third. In a third respect also—that in which anthropology establishes the personal character of God considered as object of religious devotion—a very clear confirmation comes from psychology.

Of course, if religious experience proceeds by an idealization of self, as psychology asserts, nothing but a personal self can be its appropriate object. The principle point of interest, then, becomes the actual manifestation of this process of idealization. This is what anthropology supplies in great detail. The psychological need of objectivication is always present; it takes on forms indicative of the state of culture of the particular community. In very primitive times, before the race has clearly learned to distinguish persons as such from the more active and capricious manifestations of nature, these latter are 'vitalized,' 'personalized,' 'anthropomorphized' by the religious consciousness. Moving, capricious, explosive, unpredictable things and events are taken for manifestations of deity—portents, omens, eclipses, earthquakes, diseases, especially nervous and mental manifestations—all unusual

[1] The Jehovah of the Hebrews is the embodiment both of the national aspirations, as voiced in the religion of the prophets, and also of the ethical qualities of the Jews; the contrast which Jehovah presents to the polytheisic Gods of the Greeks has always attracted comment.

or obscure processes and happenings; and at this stage the objects adopted to represent and embody deity are similarly crude. But they represent, as the omens of nature do, the devotee's ways of representing the ideal self. The amulet, the fetish, the idol in some conventionalized form, stands for the deity; not indeed merely *standing for it, but really being it*, in the sense of embodying its essential presence and meaning to the worshipper. These are not for him dead things; they are centers of life—what would be to us certainly a crude life, a low order of self-hood, but to him just what our refined, artistic and rational symbolism is to us.

This intent to discover deity, in all stages of culture essentially the same, shows itself in many devices for approaching the indwelling life or spirit. The same devices are effectual in actual life—a further indication that the essence of the religious meaning is personal. The child approaches his father in much the same way as the religious devotee approaches the Great Father: he endeavors to please, to placate, to appease, to influence in some way, the action and disposition of the superior person. In religious history, to make this appeal effective, an elaborate system of mediating rites and personalities is developed.

In later development, such attempts to establish a happy relation with a remote and not impartial deity are superseded by other means of attaining communion and union with God; means of bringing the private self into common life with its ideal. Expiation, atonement, reconciliation, communion, these are all terms for aspects of this one great movement of personality. It testifies to the truth of the view that religion is a matter of progressive personal idealization.

The sacrifice of the devotee of Baal, or that of the victim of Juggernaut, the suffering of the ascetic, and the resignation of the martyr, all spring from the same motive—the need

to be at one with the Ideal, the need to *be* the Ideal Self, whose form and whose requirements the growth of individual and tribe alike prescribe. Be the form what it may, be the object worshipped never so mean, be the religious mode of expression never so barbarous, cruel, unæsthetic, all this is unimportant; for through it all the striving of the spirit to realize what the object stands for, its groping to be at one with its personal and social ideal, *this is always there, and this is religion.*[1]

IV

In the three respects now pointed out, the concurrence in result of researches in anthropology and psychology is striking and important. When we come to carry out the details a little further, certain additional points of interest appear which I may briefly state as corollaries.

a. It appears from this account, that religion is not an artifact in human culture, not a secondary and useless product of human evolution—not an 'epiphenomenon' merely. On the contrary, it embodies an essential phase of personal growth—an aspect which shows itself alike in the individual's development and in the evolution of societies. The personal self cannot grow without constantly taking from society its essential nourishment; nor can it grow without in turn 'ejecting' again into the social fellows its own experiences of struggle and achievement. Thus by a two-fold movement, the ideal personality is constantly reconstructed; it rests upon the basis of growing personal experience and social usage.

[1] One of the biological thinkers of the past generation who interpreted the Deity as an ideal person—a personal 'eject', to use his term—was G. J. Romanes. The psychological view here sketched is worked out in detail in the chapters on Religion (chaps. viii and x) of the writer's *Social and Ethical Interpretations*; see also the arts. on 'Religion' by several authors in the *Dict. of Philosophy*.

b. Again, from the anthropological point of view, we see that religious institutions, cults, usages of all sorts are a necessary part of the manifestations of human life. Everywhere the religious impulse shows itself in some concrete social form; embodies itself, so to speak, in the garments of history. The heathen carves out an idol with his hands; it is the vehicle of his religious faith. The ethnologist discovers it centuries after, unravels its meaning, and preserves it in a museum as an object-lesson in the culture of the epoch it represents. The philosophical Deist, at the other end of the historical scale, works out the reasons for his faith, defining his Deity in abstract propositions; these are the vehicles of his religious faith. The literary collector preserves his manuscript in a library—the museum of written ideas. Both alike, together with all the innumerable other relics deposited along the line of historical culture, from heathen idol to philosophical creed, reveal the one impulse, exhibit the same, the uniform human need: that of setting up a Self, ideal in character, personal in form, as the goal of development and the end of striving.

To eradicate religion, therefore, would be to mutilate personality and deflect the course of development both of individual spiritual life and of social progress. The need of religion is the same for both. Individuals find in an object, a symbol, a creed, the embodiment of the ideal which satisfies their religious needs; and this, just through the public or social character of the embodiment and the means of its realization, issues in a cult, a church, a religious communion. Man cannot have a private religion; men must be religious together. They cannot be religious together without a tradition, a local home, a more or less elaborate ritual or body of procedure. The creed, on the one hand, is the natural embodiment of the objective religious content or system of

ideas; the cult, on the other hand, is the equally natural embodiment of the social processes which unite the individuals in loyalty to a spiritual order.

One may say, of course, that humanity might have developed otherwise, might have rid itself of religion, or might do so still. Possibly, *had humanity itself been different.* What might have been, is a different question from what has been. We can only conjecture what the body and mind alike would have been—to take another case—if any one of the great animal or mental functions had been lacking or had been much altered. The issue would have been different, granted there could have been a development at all. So here: the process of self-consciousness normally issues in social and moral life, and this idealizes itself in religion. What development of personality might have been possible, had this social bond been absent, who can tell? It is not our business to find out. But we can say—as we have said just above—that if, in the future, by processes of reflection, hedonistic, egoistic, anarchistic, Nitschian or other, religion be eliminated from human life, it will nevertheless certainly have its sublimated equivalent in some form of renewed mysticism, in which the outreach toward the ideal will again embody itself. The time is full of indications of this. The man who scoffs at a creed stands in awe before the mysteries of table-turning and spirit-rapping; and the sceptic in the matter of miracles, accepts faith cures, telepathic messages from the unseen world, second sight and other equally miraculous violations of the natural order. The religious spirit, in short, outlives its recurrent forms of embodiment, and the rejection of this religion or that, this ideal or that, is always in the interest of some other embodiment, in which the same spiritual movement hastens to clothe itself.

c. Finally, coming back to the sober tasks of science, we

see that religion is an important factor in culture, from every point of view. Important vistas are opened up in history, in sociology, in education, so soon as we see that there is one genetic motive only, one factor at work, in the development of the individual and the progress of society; it is only the growth of human personality. Such enquiry unifies special researches in many fields. The study of religion throws light upon politics, upon industry, upon education—upon all the departments and interests in which the human spirit shows its activities. For the religious motive is a comprehensive social motive; in religious history, we trace events and describe institutions, in which the sociologist detects the bond of human brotherhood in its most essential forms. The educationist finds in the religious utterances of the child, as the anthropologist finds in the religious ceremonies of the race, indices to the pages of the volume of civilization.

In conclusion, I may recall our starting point—recall that we started out to describe the value of a certain point of view, the genetic, in which the influence of Darwinism shows itself in the study of Religion. The results show, both in spirit and in letter, the fruitfulness of the evolutionary theory in one of the great topics of anthropology and psychology. If we should take up, one by one, the more specific factors of Darwinism and seek to find them in this field, we should again recount what we have already discovered in the chapter on the Social Sciences. Religion is handed down by 'social heredity'—it illustrates the power of 'variations' in moral and mental characters and products—it shows the need of inner organization in the form of idealization, to fit a group or nation for its competitive life. Religion, by conserving morality, by cultivating the best, the most social, self in a people, makes the state more fit. Religion is both a

personal satisfaction and a social weapon. To use the terms employed above, it has *both immediate and instrumental Value*.

THE END

APPENDIX A.

Darwin's Judgment

The main consideration which this paper[1] aims to present, that of the responsibility of all men, be they great or be they small, to the same standards of social judgment, and to the same philosophical treatment, is illustrated in the very man to whose genius we owe the principle upon which my remarks are based—Charles Darwin; and it is singularly appropriate that we should also find the history of this very principle, that of variations with the correlative principle of selection, furnishing a capital illustration of our inferences. Darwin was, with the single exception of Aristotle, possibly the man with the sanest judgment that the human mind has ever brought to the investigation of nature. He represented, in an exceedingly adequate way, the progress of scientific method up to his day. He was disciplined in all the natural science of his predecessors. His judgment was an epitome of the scientific insight of the ages which culminated then. The time was ripe for such a great constructive thought as his—ripe, that is, as far as the accumulation of scientific data was concerned. His judgment differed then from the judgment of his scientific contemporaries mainly in that it was sounder and safer than theirs. And with it Darwin was a great constructive thinker. He had the intellectual strength which put the judgment of his time to the strain—everybody's but his own. This is seen in the fact that Darwin was not the first to speculate in the line of his great discovery, nor to reach formulas; but with the others, guessing took the place of induction. The formula was an uncriticised thought. The unwillingness of society to embrace the hypothesis was justi-

[1]Extract from an essay on Genius; see the writer's popular work *Story of the Mind*, Chap. x.

fied by the same lack of evidence which prevented the thinkers themselves from giving it proof. And if no Darwin had appeared, the problem of biological development would have been left about where it had been left by the speculations of the Greek mind. Darwin reached his conclusion by what that other great scientific genius in England, Newton, described as the essential of discovery, 'patient thought;' and having reached it he had no alternative but to judge it true and pronounce it to the world.

But the principle of variations with natural selection had the reception which shows that good judgment may rise higher than the level of its own social origin. Even now the principle of Darwin is but a spreading ferment in many spheres of human thought in which it is destined to bring the same revolution that it has worked in the sciences of organic life. It was not until other men, who had both authority with the public and sufficient information to follow Darwin's thought, seconded his judgment that his great discovery began to have currency in scientific circles.

A passage in Professor Poulton's *Charles Darwin and the Theory of Natural Selection* (1896, pp. 12 f.) is so fully in accord with the position of my text that I allow myself to quote it entire:

"It is a common error to suppose that the intellectual powers which make the poet or historian are essentially different from those which make the man of science. Powers of observation, however acute, could never make a scientific discoverer; for discovery requires the creative effort of the imagination. The scientific man does not stumble upon new facts or conclusions by accident; he finds what he looks for. The problem before him is essentially similar to that of the historian who tries to create an accurate and complete picture of an epoch out of scattered records of contemporary impressions more or less true, and none wholly true. Fertility of imagination is absolutely essential for that step from the less to the more perfectly known, which we call discovery.

"But fertility of imagination alone is insufficient for the highest achievements in poetry, history, or science; for in all these subjects the strictest self-criticism and the soundest judgment are necessary in order to insure that the results are an advance in the direction of the truth.

"It is probable then that the secret of Darwin's strength lay in the perfect balance between his powers of imagination and those of accurate observation, the creative efforts of the one being ever subjected to the most relentless criticism by the employment of the other. 'We shall never know,' I have heard Professor Michael Foster say, 'the countless hypotheses which passed through the mind of Darwin, and which, however wild and improbable, were tested by an appeal to nature, and were then dismissed forever.'

"Darwin's estimate of his own powers is given with characteristic candor and modesty in the concluding paragraph of his *Autobiography* (*Life and Letters*, 1887, p. 107):

" 'Therefore my success as a man of science, whatever this may have amounted to, has been determined, as far as I can judge, by complex and diversified mental qualities and conditions. Of these the most important have been—the love of science—unbounded patience in long reflecting over any subject—industry in observing and collecting facts—and a fair share of invention as well as of common sense. With such moderate abilities as I possess, it is truly surprising that I should have influenced to a considerable extent the belief of scientific men on some important points.' "

APPENDIX B.

Darwinism and Logic

In his interesting paper, having the same title as this note, published in the Darwin Number, May, 1909, of this Review[1], Professor J. E. Creighton cites my work, *Thought and Things*, as representative of the Darwinian point of view in logic, and criticises it in some detail. I am, of course, gratified that the work is honored in this way. I find, however, that Professor Creighton's criticisms are not altogether valid, and I will accordingly suggest certain considerations which in my opinion show this.

Professor Creighton has no difficulty in proving by quotations from my different publications, that I am a Darwinian, and that Darwinian conceptions have had frequent application in my work. Nor has he greater difficulty in showing that I often take the standpoint from which experience is looked upon as an immanent self-integrating movement. But he considers these two points of view inconsistent with each other: one interprets experience 'biologically' —as a relation of organism and mind to environment—the other 'logically' or 'teleologically' (so Professor Creighton)—as a principle of internal organization and movement. The question then is this: can both of these points of view be held at once?—or does either commit us to a philosophy which excludes the other?

Evidently the first, the method and view-point of biological science, must be upheld if we are to have a theory of mental development and evolution at all. Each mind grows up in a body, and both mind and body are in environments. Experience requires things and situations; its own movement establishes and utilizes what we call the 'trans-subjective reference.' Is the recognition of

[1] From the *Psychological Review*, November 1909.

this consistent with a theory which interprets experience as a progressive organization having its own 'logic'?

Professor Creighton thinks that the latter point of view commits one to a 'teleology' which—though somewhat vague to me—seems to require the denial of the validity of a Darwinian conception of adaptation, considered as a necessary factor in the development of experience.[1]

Proceeding then to the criticism of my views, made by Professor Creighton, I may say that it is in my last work alone, the 'Genetic Logic,' that I have taken exclusively the point of view of experience. It should not be compared with the other more biological books and papers except as this difference is recognized.[2]

In the *Genetic Logic* the attempt is made to trace out the actual movement of experience from mode to mode, all of these modes being equally 'psychic.' The result is reached that a dualism of controls, due to segregation of contents, is come upon *in experience itself.* This dualism is not injected by our interpretation, nor read in from an external point of view: *it is found by and in the process.* The important point is that by its own immanental movement into the logical mode, experience *establishes just the dualism that science adopts and employs.* In the discussion of the relation of the 'psychic' and 'objective' points of view (*Thought and Things*, I, chap.

[1] He uses the expression 'genetic or teleological' as if these two terms were synonymous (loc. cit., p. 185).

[2] It is a conscious and deliberate difference, and cannot be looked upon as a contradiction unless it can be shown that one of the points of view is rendered invalid when one takes the other. In the *Social Interpretations*, both methods are used on occasion, to supplement and confirm each other, the biological, however, having a very subordinate place. In the *Genetic Logic*, the standpoint of experience, the 'psychic' point of view, is consistently maintained. It is erroneous, therefore, to say (Creighton, p. 180), "Professor Baldwin's account professes to show, not how the mind becomes conscious of its own logical nature, but how that logical nature is engendered in it through the motor adjustments of the organism to material conditions." How the mind becomes [grows to be] conscious of its logical nature [or processes] is just what the *Genetic Logic* does profess to show.

II, §§ 3, 4), I show that the latter is simply the explicit outcome of the dualism normally established when the mode of judgment or reflection is reached.[1] The scientific is simply the logical point of view made use of as deliberate method. It involves the self *thinking of objects* which are judged about or observed—objects known to it as 'things.' This very dualism is the presupposition of the logical as such; and scientific method—whether its results issue in Darwinism, Lamarckism, vitalism, mechanism, teleology or any other type of theory—*is thinking*, no more and no less than thinking. In the more refined operations of thought upon ideas, the ideas are symbols of the things into which they are at any time convertible. The sciences of observation go directly to the things, to perceptions and sensations; but in both cases the control of the context, whether it be one of ideas or of things, is the same—that of a sphere *taken by the process to be foreign to itself.*

So far then from finding a contradiction between the point of view of evolution—dualistic as it is—and that of a psychic account of the genesis of logical process, I find that *the latter issues in and justifies the former.* Any adequate tracing out of the progression of knowledge, within experience itself, shows it to issue in a system of judgments in which the two controls—things as 'outer' and the self as 'inner'—are found confronting each other. Reflection sublimates this dualism by erecting a mediating context of ideas; but all validities in the context and all truthful references beyond it, rest upon the fact that this mediation is dual.

What then I would insist upon is the radically unreal character of the supposed contradiction. The observation, experimentation, analysis, etc., of biological science, as of all science, are processes proper and vital to the logical mode of experience. Science is logical process proceeding under its normal and necessary presuppositions. In recognizing the externality of things—the environ-

[1] Instead of allowing Professor Creighton's interpretation to the effect that the "inner and outer controls' are in my hands 'a translation into other terms of the organism and environment,' I hold that the relation of organism and environment is *a logical transformation of the dualism of inner outer and controls.*

ment—it is only following the essential movement of psychic process, which although presupposing exernality, still finds it to be a meaning of contrast with the internality of the inner control, of the self. Accordingly, one may freely use the biological method and point of view (as I have done in the paper on 'selective thinking' which Professor Creighton considers very reprehensible in this respect); for this procedure only recognizes as valid, for purposes of deliberate observation, the dualism that logical experience itself establishes for all the processes of thought.[1]

Of course, the further question will be asked: Is one's final philosophical view then to be dualistic?—is logical experience to be taken at its word and as the final word? Professor Creighton, as just cited, says that I recognize only two alternatives, mechanism and apriorism; and he suggests the third, teleology. But my recognition of these two modes of interpretation is merely to cite them as horns of a dilemma both of which are to be avoided.[2] The teleological interpretation, also, taken in its ordinary sense—barring its excessive ambiguity—is also to be questioned, and for much the same reasons. These reasons I may now briefly state.[3]

1. We are only remaining true to the standpoint of experience itself in seeking to trace out the rise and development of such categories as mechanism and teleology. They arise as meanings attaching to different sorts of experience; and by them objects and situations are consistently and profitably apprehended and treated. Some experiences have a certain regularity and lawfulness: these,

[1] It is clear then that the following statement of my view is not correct (Creighton, p. 184), "here as elsewhere the alternative for Professor Baldwin is between deriving logical principles mechanically and *finding them existing a priori*" (italics his).

[2] I do not accept the term 'mechanism' as applicable to a genetic movement proper; it denotes only one of the possible naturalistic interpretations of this movement. My own interpretation, embodied in the theory of 'genetic modes,' combats the mechanical view.

[3] The following has reference also to Professor Creighton's paper read at Baltimore, to which I listened. It may suggest to him some revision of that paper, since this discussion is new.

thus apprehended, come to mean the mechanical. In the case of other experiences, developing conation shapes the contents towards personal ends: these, so apprehended, mean the teleological. In the logical mode, these two meanings become general ways of assimilating events of one type or the other. Each is valid for its purpose, and each is restricted in its use: one means for experience just the dominance of external, the other that of internal control.

Now to use either of these as an exclusive or universal mode of interpretation is to abolish the other in its own province, and so to falsify our report of the progression of experience in which they have together arisen. The mechanical would not be mechanical but for the possession of those characters which show it to be bare of teleological meaning; it represents knowledge formed under a control which evidences itself as foreign. The teleological, on the other hand, would not be teleological but for its character as embodying the agent's control exercised in the pursuit of personal ends. Teleological processes as such are for consciousness not mechanical, and mechanical are not teleological.

I have contrasted the results of these two modes of process by using the two expressions 'knowledge through (external) control'—issuing in sequences which are mechanical in their meaning; and '(internal) control through knowledge'—issuing in sequences with which personal interest and conation are identified (*Thought and Things*, II, chap. xiv). Unless the teleologists can show, from the movement of further experience, that there is positive justification for the step,[1] they may not employ as a universal solvent the partial meaning which they favor.

2. But even if we allow the category of teleology to apply univer-

[1] Actually the progress of experience, both personal and racial, is away from animistic and anthropomorphic teleological interpretations of nature. Science has had gradually to achieve its birthright, only gradually establishing a conception of natural law which operates without 'teleological' interference. Just here is, in fact. in my opinion, the great service rendered by Darwinism to philosophical thought: it once for all established a natural law of adaptation.

sally, it too issues in a characteristic dualism from which there is no logical escape. Ends are attained *through the mediation of ideas or facts.* Facts and ideas are not ends: 'what a man hath why doth he yet hope for?'—it is a further realization, beyond the idea or fact, that he hopes for. A conscious end is always meditated—furthered or hindered—by some fact or idea. To any teleology which involves genuine purpose, the dualism of 'fact-idea and end'—taking the form of 'means and end' or of 'hindrance to end'—is as stubborn as that of 'thinker and thing' in the domain of cognition.

To escape this difficulty, the intellectual idealist goes over to a teleology which does not involve purpose in any concrete or actual sense, while he still retains vaguely the principle of 'means and ends.' But what 'means and ends' can mean apart from an agent who adopts the means (facts or ideas) to attain the ends (results), it is difficult to see. What is really present is the actual flow of genetic process, with its great dualisms of knowledge and purpose. If we take this process for what it is, it discovers itself to experience in the two modes of organization called teleological or mechanical according as the situations of actual life present contents of one sort or the other.[1]

[1] In my discussion of 'genetic series' as such (the theory of 'Genetic Modes,' *Development and Evolution*, chap. xix, described by Professor Creighton as a sort of invalid compromise), I have pointed out that such series present both aspects, the quantitative or mechanical and the qualitative or in the large sense 'worthful:' they show a form of sequence or conditioning which is not exhausted by either interpretation taken alone. Professor Creighton is, I think, in error in saying (p. 182) about this theory that 'the something new' that it recognizes as arising in a genetic series 'simply comes into the series as a miracle.' I reply: it is not a miracle except to one who has already adopted a quantitative or mechanical conception of all natural change. Such a cast-iron quantitative conception apart—why should not nature produce novelties? James and Bergson, as well as the present writer, have recently protested against the arid 'energistic' conception of 'cause and effect.' For my part, I am not willing to prejudice the case by using the terms of mechanics for such sequences; I have therefore employed the term

If this actual genetic movement, so apprehended in experience—the progressive integration of contents, as on occasion both 'factual' and 'end-fulfilling' for the agent—is what Professor Creighton means by 'teleology', then I am with him. I prefer that term to 'mechanism,' if one is to use but one term for the entire movement. But my aim is to go further constructively, and to discover what the issue is when the movement does not stop with the *mediation by ideas* in either of these two ways—with mediation as true for knowledge, and as good for purpose—but when it goes on to apprehend the contents in a further mode of direct contemplation. The movement then goes beyond the objectification of the contents in judgment of fact and value; and reaches a higher hyper-logical immediacy.[1] My present purpose is accomplished, however, in showing how it is possible to turn the edge of Professor Creighton's criticism. I accept both the terms of the supposed contradiction. I hold that when legitimately employed, mechanism and teleology are naturalistic or empirical categories, both valid, but both restricted, in their proper use, and both superseded in a hyper-logical mode of experience.

'progression'. . . . Further, I do not admit Professor Creighton's claim that a genetic series, as I describe it in my theory of 'genetic modes,' 'exhibits no identity throughout the different stages of the process.' On the contrary, the varying degrees of identity which it actually has for consciousness serve as motive to the transformations of the 'sameness' meaning, as traced in my book in great detail, up to the logical judgment of identity (vol. i, chap. viii, §3, and chap. ix, §5; vol. ii, chap. x).

[1] To the development of this point much of the third volume of the *Genetic Logic* is to be devoted. In an article entitled 'Knowledge and Imagination,' *Psychological Review*, May, 1908, I have stated in outline the characters in virtue of which æsthetic experience appears to discharge this office. In the same volume (*Thought and Things*, iii) the genetic processes are also discussed by which experiences of truth and utility respectively come to be reflected in the 'intuition' and 'practical reason' of the individual.

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