Evolutionary Philosophy and the German War.

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In the writings of the German intellectual classes during the early part of the war much was said about the biological justification for the conflict, and the German mind built up a biological argument which was faultless in logic, if the premises be granted. It is an argument which is readily comprehended in view of the historical development in Germany of the Darwinian doctrine of the survival of the fittest. This conception early took firm hold of the biological public of that country to the practical exclusion of those other explanations of the evolution process that have held scientific attention in other countries. The leading advocates of the principle of selection have been mostly eminent German scholars, many of whom have been even more ardent selectionists than Darwin himself. Owing to the stress they place upon selection as a factor of evolution, they comprise the school of Neo-Darwinians, and it is they who have carried Darwinism to the extreme in applying it to the problems of mankind. Obviously Darwin never anticipated such an application.

By selection the biologist means that of a race of individuals certain ones, especially desirable on the basis of some criterion established in the case, are chosen to be the parents of the next generation; and of the next progeny, those which show this same desirable character are chosen. In this way the domesticated races of animals and plants have been established, as is well known to the practical breeder. Natural selection, which Darwin assumed to be the chief factor in the evolution of species, behaves in the same manner that artificial selection in the hands of the breeder does; that is, the conditions of nature establish the criterion to which species must conform, and those members of the species which are best adapted to the conditions in which they are placed will be the ones that survive the inevitable struggle and give rise to the next generation. Whenever variations arise, however small in character they may be, if they give the individual possessing them any added advantage over its fellows, they will be perpetuated because of their usefulness. By the gradual accumulation of these small continuous variations the race is more and more adapted to its surroundings, and progress in evolution is made.

In spite of their zeal in the study of the selection factor, German scholars have not taken a leading part in the recent phases of investigation into evolutionary phenomena. It is true that since Darwin's

original announcement, the most important single contribution to the understanding of these processes has been made by the leader of the Neo-Darwinians, Weismann. To him is due the conception of the continuity of the germ plasm, and the corrollary from this that body characters acquired in a single generation cannot be inherited. In other words, the germinal substance is carried from parent to offspring without interruption, and the variations which appear in the offspring are not inherited from the parent unless they are of such a nature that the germinal substance can carry them on. Thus an extra finger would be inherited, in all probability, but a bent one, due to an accident, would not be. The importance of Weismannism lies in this, that it is the foundation for the studies in genetics and eugenics which have occupied the center of the biological stage in this country and elsewhere for the last twenty years. To these subjects the active German investigators of the present time have contributed little. This fact should not minimize the contribution of Weismann, but, nevertheless, it does serve to explain to a certain degree the lack of German appreciation of the other factors of evolution, such as mutation, which are now known to be of the greatest importance in producing new species or races. German scholars are not now taking an active part in the modern studies of genetics; rather they explain most evolutionary phenomena on the basis of natural selection, and the German national philosophy is likewise based upon the acceptance of natural selection applied without modification to human life and society.

To the mind of most German biologist-philosophers, struggle is the rule among all the different groups of organisms, human groups included. Through all the ages that mankind has been developing, he owes his progress to the same factors that influence the evolution of other groups of animals and especially to the factor of natural selection. Selection is accomplished as the result of a bitter struggle for existence as ruthless in its outcome in the case of man as in that of beetles or snails or the beasts of the field. It follows that war is necessary that the best of the world's peoples may overcome their weaker neighbors and demonstrate their own superiority. The following paragraph from Kellogg explanatory of the German views helps to set before us the implicit Teutonic reliance in selection and in the irresistible consequences of the struggle for existence.

"This struggle not only must go on, for that is the natural law, but it should go on, so that this natural law may work out in its cruel, inevitable way the salvation of the species. By its salvation is meant its desirable natural evolution. That human group which is in the most advanced evolutionary stage as regards internal organization and form of social relationship is best, and should, for the sake of the species,

be preserved at the expense of the less advanced, the less effective. It should win in the struggle for existence, and this struggle should occur precisely that the various types may be tested and the best not only preserved but put in position to impose its kind of social organization—its Kultur—on the others, or alternately, to destroy and replace them."

The so-called biological argument for the war, as it has shaped itself in the German mind, may, I believe, be formulated in three propositions. From these logically follows a conclusion, if the premises be granted, that abundantly justifies the German nation in carrying on the war for its own glory, and in taking measures of any nature whatever—no matter how horrible—which would make them dominant over the rest of the world. These propositions are the following:

1. In the evolution of any group of organisms natural selection is the chief, if not the exclusive factor in bringing about progress. Natural selection is effective because there must always be a struggle, either between individuals of the same group for space, food, etc., or between different groups for favorable living conditions, or between the individuals in question and the forces of nature, as climate, flood, etc. In the struggle for existence the individuals best fitted for the conditions of their environment will be selected to carry on the race and their characters preserved.

2. The principle of natural selection is applicable to the human race, to the nations of the world, just as it is to groups of lower animals, and there is to be expected a struggle for existence between the various nations. War is the usual form of struggle, and it offers an opportunity for the best among the nations to come to the front at the expense of the other less fortunate ones. There is something in the innate character of nations which finally makes them irreconcilable, and in the long run the principle of mutual aid, which is applicable to ameliorate the struggle within groups, cannot act to diminish the realness or the severity of the inevitable struggle.

3. The German nation is the mightiest and greatest nation upon the earth, and its social and political development has outstripped that of any other people. Since this is true, anything which operates to deprive Germany of her rightful place of dominance among the powers of the earth is wrong and cannot be allowed to stand. War is a worthy occupation for the German people, for it creates an opening by which their dominant traits are given the opportunity for full expression and development. The policy of terrorism is justified, for it aids the selected German nation to maintain itself over its weaker neighbors, and along with the natural results of war, it serves to remove the inferior and unfit peoples from the contest and thus make more room for the better fitted survivors.

That the points in the argument for war are not overdrawn as here formulated might easily be shown by quotations from many German writers. From eminent as well as from humble sources might be drawn proof that this point of view is part of the mental fabric of that nation. Many articles are available to show that the above propositions represent the average opinion of the dominant classes, while from Prussian sources come utterances that make the version here given seem woefully understated. Actual quotations here, however, appear unnecessary in view of the many statements in newspapers, magazines and authoritive publications of the years since the war began which depict plainly the German attitude.

The purpose of this discussion is to show that when critically examined this argument is not in every respect biologically sound. Indeed the points in the argument are only half truths, and as such can not be used as a basis from which to draw general conclusions. Not only is the biology of the present time set against war as an instrument of racial progress, but recent investigations go to show that, in some of its aspects at least, war tends to retard the development of the nations which pursue it. Biology has said nothing for which it merits the taint left upon it by this false argument. To grant the fallacious premises is possible only upon misinterpretation of the facts and teachings of nature.

Of the points advanced in the supposed biological argument for war, the first is the all importance of the factor of natural selection in evolution. Evidence for and against this view is familiar to all biologists and needs only be mentioned here. In Darwin's theory of evolution, natural selection was indeed the chief factor by which progressive development was thought to be accomplished; but he admitted that there might also be other factors of importance. Natural selection depends upon the usefulness of the character under consideration; that is, in the struggle for existence it is the character which is most useful, which is best fitted to the environment wherein the struggle is conducted, that is preserved. Darwin supposed that, as the small variations accumulated, they gradually fitted the individual possessing them more and more to its surroundings, and thus were passed to the next generations. Even the most minute, the continuous variations were to be interpreted thus. Discontinuous variations, by which offspring markedly different in some particular character are produced, were recognized occasionally to occur in nature, but they were thought to be rare and therefore insignificant. Darwin also recognized that his factor fails to account for the perpetuation of minute variations until they are sufficiently developed to be of importance to the organism. Natural selection without doubt plays its part in the case of a useful character. The white coat of the polar bear renders that animal inconspicuous on the snow

fields of its habitat; but it is hardly to be supposed that the first patch of white hair that appeared upon the ancestral type of bear was perpetuated because it offered any great degree of security to its owner. Natural selection here loses its force, while discontinuous variations come into consideration. It is now known that the discontinuous type of variations, or mutations as they are called, is less rare than Darwin believed. To mutations is now attributed the larger share in the origin of races and species. The role played by mutations is illustrated by the recent experiments in the inheritance of the fruit fly, Drosophila. In laboratory cultures of these fruit flies there occur strains without eyes, other strains with vestigeal wings that can have no possible usefulness, as well as numerous other strains with characters widely different from those of the parent stock. If they had arisen in nature they would have been recognized without question as distinct sub-species at least, and probably as distinct species. Natural selection, as this and other cases that might be cited show, is not by any means all-powerful in producing new races and species.

In late years the selection problem itself has been attacked from many angles, and a great deal of experimental work has been done on it. The problem resolves itself into these questions: Are organisms indefinitely variable, and by constant selection can we hope to develop a character at will, or can we carry on our selection only to a certain point, beyond which it is not effective? As yet no definite answer has been made, and controversy has divided students of inheritance into two schools. Both agree that positive results come from selection, but one school holds that a limit is soon reached, after which selection is no longer effective. According to these geneticists, selection results in a sorting of the different strains of which any organism is composed into the original pure lines. Thus the bristles numbers on the thorax of a fly may be selected for perhaps thirty generations with an increase in the mean, but at length continued selection causes no further rise in the mean of the bristles number. If further selection is to be effective a new mutation must occur. Without some such change in the germ plasm selection cannot be responsible for continued progressive development.

According to the other school of biologists, germinal modifications are necessary before selection can bring about any real change in the organism, but these germinal changes are of such common occurrence that it is possible practically to continue development by selection in the direction desired. Between these two widely different viewpoints no decision can be reached, for sufficient experimental evidence is not at present available. Certainly there is not enough exact scientific data to justify relying solely upon natural selection, or making a fetish out of the conception of the struggle for existence.

One more important criticism of the narrow Darwinian interpretation should be pointed out. Evolutionists in the last quarter of a century have come to see that the struggle so much stressed in the years immediately following Darwin's life is by no means an unmitigated one, but that, on the other hand, those communities of animals that are most highly developed are the ones in which there is a division of labor and in which co-operation takes the place of bitter competition. Co-operation results in community prosperity and growth. This is the principle of mutual aid, and even a cursory examination of the facts of nature will show that it is not an unimportant one. It depends upon several observations which may be easily verified. There is not a vast number of species of animals that lead isolated lives, but there are numberless species that live in societies which seem to have their *raison d'etre* in better means for defense, for securing food, or for rearing offspring. A fairly keen competition and warfare may often be noted between animals which are members of different classes or species, or even between different tribes of the same species, but among individuals of the same community or tribe peace is the rule. And if an entire population is forced to struggle against the unfavorable conditions of drought, flood, famine, disease, wind or weather, the survivors, weakened by such a contest, can at best produce offspring with insufficient vigor to bring about the progressive development of the species. It is common knowledge that when a pestilence of any kind has swept an animal community, the remnant of the population is years in restoring its former numbers. Finally the degree of development of any group of animals is measured by the degree in which social life, co-operation for mutual good, and division of labor obtain, with the corresponding avoidance of severe competition. The social species prosper, while many of the unsocial ones tend toward decay. The principle of mutual aid presents another aspect of the story of development in the animal world which must not be overlooked, and shows that struggle is not in every case the chief characteristic of progress. This principle doubtless does not deserve the rank of the chief factor in evolution given it by Kropotkin, one of its proponents; but neither does the struggle for existence deserve the prominence which the German Neo-Darwinians have given it. The isolated species of animals struggling against his kin, his neighbors and his physical environment cannot longer be looked to for the entire cause of progressive evolution; rather we must look to both the social and unsocial, and remember that probably no single factor is broad enough to account for all the complexities of animal development.

These objections to and arguments against the Darwinian factor of natural selection, and especially the narrow Neo-Darwinian interpretation of it, constitute abundant reasons why it cannot be accorded the chief, the all-important place in the progressive development of animals.

They do not in any way constitute a denial that progressive development takes place, for that is a matter of common observation, but they do deny that natural selection is the all-powerful causal factor in bringing about that development.

The second point of the German war-biologists is that natural selection is applicable to the human race and the nations of the world just as it is to the lower animals. It must be admitted without question that there is a tendency for mankind to follow the same natural laws that the lower forms of life do, but this tendency is very often modified. Man does not owe his development to any one factor exclusively, whether it be natural selection or any other. Man differs from the lower animals in the degree to which the particular factor in question is applicable in his evolution. Most animals are forced to adapt their mode of life to the conditions in which they live, but man can by his superior intelligence and ability adapt the environment to his own needs. He has ameliorated the severity of the struggle with climate and other physical forces not by growing heavy fur or seeking caves, but by taking the skins of other animals or the product of the fields to make himself clothing, and by building shelters which render him almost completely master of the elements. The individual whose eyes are too weak to endure a severe struggle with unfavorable nature or more vigorous competitors is not at a disadvantage, for he, or rather those with whom he co-operates, have devised lenses by which the eyes are strengthened and he is enabled to occupy his rightful place among his fellows. The human individual is rendered superior to his environment; his form of adaptability to the conditions of nature consists in an ability to adapt them to himself. Furthermore, what is true of the individual is only true in a larger measure of whole nations.

Co-operation is the keynote in the life of mankind. Individuals organize themselves into communities, even among the most primitive of peoples, and the communities band themselves together for the mutual benefit of all their members. In each community there is a division of labor by which all of society is helped to a more successful life. The city nations of the Europe of the Middle Ages have given way to the state nations of the present time, and now peaceful and harmonious dwelling together prevails over large areas, to the increasing prosperity of the inhabitants, where formerly conflict and warfare was the rule between the subjects of separate cities or of neighboring feudal lords. As allegiance to cities gave way to allegiance to states, co-operation was extended. In no other nation was the principle of such organization more developed than in Germany. The Germany of Kaiser Wilhelm II owed its strength and efficiency to its organization and co-operation. German thinkers of the present time are fond of saying that no nation that does not have an extremely centralized form of government devel-

oped on the basis of a strict and complete organization can really become great and continue so. This is, of course, nothing more than the principle of mutual aid carried to a nation-wide extent. And if the life of a nation is made more effective by co-operation, does not the same rule apply to neighboring world powers? The logic that proves co-operation to be the best means to develop the people of a nation should be carried further and demand the co-operation of the nations themselves. Germany has not felt the full force of the logic of its own situation. There co-operation has worked effectively by removing competition and struggle from the inhabitants of an empire where formerly conflict was the rule and peace the exception. And this co-operation within the empire is completely at variance with the philosophy that regards conflict and struggle between nations, the downfall of one people and the exaltation of another, as the working out of natural law. The argument that natural selection and struggle for existence must be applied to peoples is most effectively disproven by the development and life of the German people itself. In every nation the highest development of its society is based upon the complete application of the principle of co-operation. And the highest development of the society of the world will await the co-operation of the nations which dominate and control the world's destiny.

The final point in the argument is the pre-eminence of the German people. Very few will be found to admit that this people represent the highest development of mankind and are the best fitted to rule, for such an admission would imply a very narrow understanding of the meaning of best fitted. At the beginning of the war Germany was certainly the best organized nation for military purposes; but when all is said, military strength will never give any people the first rank as the best developed of mankind. Intellectually Germany has stood well to the front, but it is noteworthy that this position is not due to the politicians and soldiers of Prussia but to the general interest in culture and learning that prevails in the south and west of Germany. Even Prussian Von Bülow remarked that "German intellect had already reached its zenith without the help of Prussia." Spiritually the life and performances of Germany will not stand close scrutiny. The misdeeds and moral corruption of the German military authorities are probably the most outstanding feature of the war. Certain it is that the life and deeds of the German nation do not stand in the eyes of the world as the finest and most fitted type of manhood. No attempt in the defense of this people can ever give them the place that they claim.

For all these reasons, therefore, biology cannot rightfully be charged with having furnished a foundation upon which to construct a philosophy of war.

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