

BIOLOGY AND MARXISM

BY

MARCEL PRENANT

PROFESSOR OF ZOOLOGY AT THE SORBONNE, UNIVERSITY OF PARIS

TRANSLATED BY

C. DESMOND GREAVES

WITH A FOREWORD BY

JOSEPH NEEDHAM

READER IN BIOCHEMISTRY, UNIVERSITY OF CAMBRIDGE,
MEMBRE CORRESPONDANT DE LA SOCIÉTÉ DE BIOLOGIE DE FRANCE

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FOREWORD

To be entrusted with the task of introducing this translation to English readers, the first work in that language¹ on biology and Marxism, must be regarded as no small honour. There are other English men of science who would perhaps have carried it out much better than I can hope to do. Sir Peter Chalmers Mitchell gives us the example of a biologist of the last century, the contemporary of figures now almost legendary, such as Ray Lankester and Michael Foster, who after a lifetime devoted to the scientific care of the London Zoological Gardens ending in the achievement of the great park of Whipsnade, concluded in his Spanish retirement that communism represents the next stage of civilisation at which man must aim, and proclaimed this to be so in the courageous last chapter of his Autobiography.² Professor J. B. S. Haldane, equally at home in all departments of biology, shows us the meaning of the unity of theory and practice; while Professor J. D. Bernal, whose discourses, as yet very insufficiently printed, have illumined many a fascinated audience, could elucidate, none better, the dialectic flow of physical and biological evolution. But the invitation came to me doubtless for two reasons, first, because I have from the beginning of my scientific work made a study of theoretical biology, and secondly, because I have the privilege of the personal acquaintance of Professor Marcel Prenant.

¹ Certain chapters, however, in R. L. Worrall's "The Outlook of Science" (Bale, London, 1933), are not without value.

² "Fullness of Days" (London, 1937).

It was in 1925 that I arrived one day in early summer for a period of work at the Marine Biological Station at Roscoff in Brittany, and there I found Prenant as sub-director, the son of a most distinguished father, Auguste Prenant the histologist. Throughout a very enjoyable period of work we collected animals, made experiments, and discussed biological topics together, in the most academic isolation, almost unconscious of any links between our problems and those of social and economic life. What first awakened Prenant to the connection between biology, philosophy, and politics (for every sociological change has a political aspect) I do not know, but for many of us in England it was the experience of the General Strike in the following year that forced upon our attention the relations of men with men and with the Nature which should be their fruitful source of good, but which in this still barbarous age is too often the source of strife between the possessing and the dispossessed. If we look through the whole of evolutionary history, as Prenant, for instance, does in the book now before us, we cannot but see a progressive rise in level of organisation, exceedingly slow but also very certain. Why should it have stopped with us? In the past there were definite points of change, definite triumphs: the first attainment of a stable internal medium, the first vertebral column, the first plough. May we not expect future advances of technique: perhaps the first stratosphere flight or the final conquest of cancer? Similarly in the past small groups of tribes combined to form peoples and peoples were welded into empires. May we not expect the abolition of national sovereignties and the coming of the classless world-republic? But anyone who reasons thus is driven to think of man on the grand scale, not just the small circle of those who share the habits and prejudices of his own upbringing; and as the vast majority of men

are working men, earning their daily bread under the shadow of an economic system which has other ends than their happiness, he is driven first to study and then to aid as best he can the great working-class movement of the world.

In England the working-class movement has traditionally been averse from all theory, and some of its leaders have even boasted that they had no philosophy. Yet by a curious paradox it was a London scholar and a Manchester business man (though German, it is true, by origin) who laid the foundations of the philosophy, the economic system, and the theory of history by means of which the working class becomes conscious of its mission—the abolition of all classes and the replacement of the exploitation of men by the administration of things. Marx and Engels, as the most cursory glance through their writings and their letters to each other will show, had a sort of universal genius which enabled them to understand very well what was going on in the sciences of their time, and to this biology was no exception. Hence in the present book Prenant is able to give some quotations of great historical interest. But his main thesis is, of course, that the Marxist philosophy of dialectical materialism, being a sort of quintessence of the scientific method itself, is able to help the biologist both by pointing the way towards the kind of hypotheses which it will be most profitable for him to form and by indicating which questions are meaningless and which are answerable. Terms such as the “negation of negation” and the “inter-penetration of opposites” are often derided by those who have reasons of their own for doing so, but the technical terminology of any philosophy always appears a particularly uncouth jargon to those who have given it no study. Prenant has let the facts speak for themselves, knowing that nothing is more dialectical than Nature. He has

emphasised from time to time the value of dialectical thought in the concrete problems of biology. But I might add two examples which show particularly clearly the value of the concept of dialectical level.

As a matter of personal experience, the years after the war were occupied with a study of the origin and historical development of the classical controversy between vitalists and mechanists. Since my sort of biology was biochemistry, this difficulty was unavoidable. Could the phenomena of life be explained by known physico-chemical laws or by laws congruent with them to be later discovered? Together with a group of colleagues under the leadership of Dr. J. H. Woodger, we came to the conclusion that life phenomena constituted a separate level from the inorganic world on account, and only on account, of its exceedingly complex degree of organisation. The mechanists had been entirely right in opposing hypotheses of vital forces, entelechies, etc. The vitalists had done good service in persistently drawing attention to the phenomena of organisation. Just as the liquid crystal state has laws which do not operate for other forms of matter, such as liquids or true crystals, so the laws of the living cell, though eventually perfectly comprehensible, simply do not operate elsewhere. We then found that this was precisely the position of dialectical materialists: life constituted a new dialectical level, not inscrutable, but not to be forced into the framework of laws operative at the lower levels.

The second example has more practical bearing on human life. The forcing of a higher dialectical level into the framework of laws operative at lower levels is the cardinal heresy of fascist theory. I use the word "heresy" advisedly, for Athanasius, who believed that the universe was governed by a committee, could have been no more firmly convinced that the Arian heresy

of monotheistic dictatorship was dangerous to man. The fascist philosophers, whatever their assurances may be, recognise at bottom no categories other than those of biology. National imperialist ambition is to be founded on theories of racial superiority, and that these are utterly erroneous is not here the issue: the point is that they are, or wish to be, purely biological.¹ The principle of leadership from above is founded on a pessimistic valuation of human psychological capacity.² The totalitarian principle depends on the analogy between society and a metazoan organism or between society and a hive of colonial hymenoptera.³ Totalitarian war is justified on the ground of an assumed struggle for existence between the national states of to-day, regarded as ultimate biological organisms, as if a centrally controlled world population were not yet a possibility.⁴ Aerial warfare on civilian populations is claimed as a eugenic measure since the crowded dwellings of the "lower" classes suffer most severely.⁵ An eminent (and presumably responsible) biologist in a democratic country can propose the wholesale sterilisation of the unemployed as "unfit," on the basis of a flimsy analogy with wild populations of lower mammals.⁶ English sympathisers with Fascism, such as Sir Arnold Wilson at a recent conference of Modern Churchmen, praise the fascist states precisely because they and they alone are striving to build human society upon a sound

¹ Cf. Paul Brohmer, "Mensch-Natur-Staat; Grundlinien einer nationalsozialistischen Biologie" (Frankfurt a/M., 1935).

² L. Klages, "Grundlagen d. Charakterkunde" (Leipzig, 1928) and A. Rosenberg, "Der Mythos d. 20ten Jahrhunderts" (Münich, 1934), also "Blut u. Ehre" (Münich, 1934).

³ Cf. E. B. Ashton, "The Fascist, his State and Mind" (London, 1937).

⁴ General Ludendorff, "The Nation at War" (Hutchinson, London, 1936).

⁵ Major Erich Suchsland, *Archiv. f. Rassen u. Gesellschaftsbiologie*, 1936.

⁶ Prof. E. W. MacBride, *Nature*, 1935, 137, 44.

biological basis.¹ This is not merely nonsense, it is nonsense dangerous for civilisation. Man did not arise from the animals by building himself upon a sound biological basis. He had that already. Man's society must be built upon a sound sociological basis. Obviously there must be a fundamental place for biological and also for chemical and physical considerations, but man differs from the animals in the possession of highly developed consciousness and the utilisation of tools for the production of the means of life. He in his societies therefore constitutes a higher dialectical level, not to be forced into the framework of lower levels. Thus fascist philosophy runs counter to the entire trend of evolution, and if we may judge from the past it will perish like everything else which resists this trend. But the suffering involved in the process may well be incalculable.

All this and many other things besides will be found in Prenant's book. As might be expected, there are various minor points on which I do not find myself in complete agreement with him and others which I should not have put in quite the same way. Dialectical materialism is so sharp an instrument that although there can be no question about its value as a general system, the detailed application of it must always be a delicate and difficult matter, in which dogmatism must at all costs be avoided. Specific interpretations, if made with undue confidence, may be dangerous. For example, most biologists believe, at any rate, that during the recent discussions on genetics in the U.S.S.R. classical gene theory has suffered some criticism which was not well based. The further discussions and experiments which are still going on, and for which, as for all other branches of science, the U.S.S.R. offers more

¹ Sir Arnold Wilson, *Modern Churchman*, 1937, 27, 339.

material support than any other human community, will assuredly in due course put matters straight.

As for Prenant's book, it has received widespread approbation and Soviet biologists have recommended that it be translated into Russian. It is certain that the book will be valuable to many an English-speaking student as a pocket companion to the technical material which he has to master, and to older biologists as a stimulating aid in the consideration of their problems, both special and general.

J. N.

Tamaris, 25/9/37.

NOTE

References in the text are given to the following editions (title in English if translated) :

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K. MARX and F. ENGELS

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F. ENGELS

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G. PLEKHANOV

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V. I. LENIN

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INTRODUCTION

I

IN the world of 1938 the teaching of Karl Marx is an ideological force of profound significance. By its accurate forecast of the decay of capitalism and its every day more brilliant successes in the U.S.S.R., it is forced upon our attention, whether we are attracted to it or not. It can be intensely hated, violently attacked, cleverly bowdlerised . . . it cannot, however, be ignored. The rapidity of its penetration among the working classes and intellectuals has altered out of recognition the pre-war position, when it was possible among a group of socialist students in London or Paris to find not one who had read "Capital."

Its advances have been mainly in the field of economics. For many thinkers, even among those who most sincerely admire the practical successes of communism, dialectical materialism¹ remains a bogey, something separable from its implications, social or scientific. It is associated with intellectual tyranny and accused of destroying the true objectivity of knowledge.

This is not the place, however, to consider whether science can ever attain complete objectivity or whether each historical period does not necessarily impose on it the limitations of its technique and social structure, whether indeed the Independence of the Spirit is not a mere façade cloaking the domination of historical factors.

The object of this book is to show by taking biology

¹ For the definition of dialectical materialism, see Chapters 1 and 5.

as an example that, far from placing tyrannical restrictions on science, dialectical materialism is of the nature of science itself, the experimental method continued without a break, but now not afraid to face its own implications. It is a striking fact that so many of our best empirical biologists find themselves thinking dialectically when they are aiming at a synthesis, but do so only in flashes and fail to keep it up.

"It is possible," said Engels, "to reach this standpoint (the dialectical view of Nature) because the accumulating facts of natural science compel us to do so; but we reach it more easily if we approach the dialectical character of these facts equipped with a consciousness of the laws of dialectical thought."¹

II

In the first part of the book an attempt will be made to take from modern biology the essential facts on which Marxism in part reposes. Has science shaken or strengthened this basis since the time of Marx and Engels? Are we to-day more or less certain than then of the evolution of living species, that fragment of the dialectic of the world? Are we more or less certain of the recent animal origin of man, the foundation-stone of materialism? What do we know of the beginnings of human society? What, finally, is the relation of man to the world of living things?

This first part with its four chapters is clearly incomplete. Dialectical materialism acquires a comprehensive philosophical meaning only when it draws into its synthesis the totality of knowledge. In the domain of human relations, the social events which we are witnessing prove it more correct every day. Let us hope that some qualified expert will undertake the task of giving us a dialectical introduction to the recent

¹ "Anti-Dühring," p. 19.

prodigious developments in the physical sciences, bringing up to date Chapter V of "Materialism and Empirio-Criticism" and justifying the words of Lenin :¹ "Modern physics has deviated towards idealism principally because physicists ignored the dialectical way of thought."² Here, however, we must confine ourselves to the world of living matter.

In the second part the principal problems of biology will be examined from the materialist point of view. It is not only a question of showing that Marxist interpretations fit the facts of modern science : this could be claimed also by any kind of enlightened organicism. It would, however, fail in one essential respect, namely, that it would be incapable of providing sound and fruitful working hypotheses likely to lead to fresh advances in biology. But a review of recent biological problems will also show that an understanding of materialist and dialectical thought would have hastened their solution, and can still do so.

If the empirical biologist rejects vitalism it is precisely because it seems to him unhelpful and barren, even sterilising. His antipathy to it is an implicit illustration of Marx's celebrated Theses on Feuerbach :

"The question of knowing whether human thought can attain objective truth is not a theoretical but a practical question. It is in practical activity that man can test and demonstrate the truth, that is to say the reality, the power, the accuracy of his thought."³

III

I owe some kind of apology to any biologists who may happen to take up this book. It is not, however,

¹ "Materialism and Empirio-Criticism," pp. 211 ff.

² See on this, P. Langevin, "Corpuscules et Atomes" (Hermann, Paris, 1933).

³ "German Ideology," p. 533.

primarily designed for them. They will find in it no new experimental results, no reviews of the literature. Lack of space has made it necessary to restrict its scope to that of a concise exposition of the most important facts and to leave the rest to the numerous technical works, to which it may serve as an introduction. This is not meant to imply that each question does not need studying in detail by the materialist method.¹ Particularly it does not mean that laboratory experiments and, better still, those experiments furnished by the social use of applied science, are not the living sources from which Marxist science flows, and which, as Engels said, must unceasingly modify the formulæ of materialism. But the most urgent need felt and expressed recently by many biologists is some attempt at ordering the mass of material unearthed by empirical science.²

Since 1932 I and my students in the Workers' University of Paris have discussed biology every week. With them I have learned much ; at least as much as I have taught them. If one thing has impressed me greatly it is the ease and accuracy with which a good Marxist can handle a scientific question which is quite new to him, putting forward the right objection, stating the problem with precision, placing it in its proper context. From such friendly discussions this book has enormously profited. In return I hope it will prove of some use to the students of Workers' Universities and to all those who, like them, are interested in the study of Marxism.

I have still to make my apologies to the Marxists for the gaps which are certainly to be found in this exposition. In particular difficulties of language have prevented me from making use of Soviet work on the

¹ I have tried to do this for one sort of biological problem in my "Adaptation, Écologie, et Biocœnotique" (Hermann, Paris, 1933).

² Woodger, Tzanck, and many others have appreciated this.

relations of biology to Marxism. Time will know how to repair these defects ; but it seemed to me that in so far as this book was likely to prove of use, it should appear without delay.

IV

Finally, there is one fundamental objection which has been made to me by many critics. The affirmation, they say, that " there exists an external world on which all thought depends, whereas the contrary is not true " is a mere assumption. The context shows, I hope, that there is nothing fatalistic about this statement ; for Marxism has great confidence in the co-ordinated conscious activity of mankind. The statement allows varying degrees of autonomy to mental activity, small or large according to circumstances, and very large in the case of man. What it refuses is the recognition of an origin of mental activity foreign to matter or a development of it independent of matter. The statement is, in fact, monist. Its acceptance or its rejection is not a purely theoretical question, an abstract metaphysical point, as my critics seem to think. It is a question of practice, and the experimental proof of such a monism must be expected to take specific and concrete forms in all departments of human activity.

For me personally, the author of a book on biology such as this, the question takes the following form : Does the book apply a synthetic conception of any value to the realm of living organisms, ranging from the simplest protista to the highest mammals and man ? Does it indicate a sure method capable of elucidating various difficult problems in theoretical biology and of suggesting new and fruitful researches ? In a word, is it good or bad ? If it is bad, we might have to conclude that Marxism was not applicable to biology and had no value as an interpretation of the world. Or,