

THE COMMUNIST VIEW OF SCIENCE

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THE scope of this paper is the relationship between Marxism and science, and I shall deal principally with biology, both because it is the science that has been most affected by the impact of Communism, and because it is the one with which I am best acquainted.

To begin, we must go back to the writings of Marx and more particularly of Engels, who was much preoccupied with scientific questions. It is convenient to distinguish three groups of ideas in these writings, which may be described as materialistic, dialectical and ethical. In common with those whom Marxists call vulgar materialists, people like Büchner and Moleschott, Marx and Engels affirmed that mind is an epiphenomenon of matter—the Marxists say a reflection of matter; they are therefore realists asserting that matter exists independently of human cognition; they believe in strict causal determinacy operating according to physical law; and they deny that God exists. The dialectics comes from Hegel but most of the fundamental notions occur in the Greeks. The most important dialectical principles are firstly, the unity of opposites, which asserts the fundamental interrelatedness of all the objects composing the physical universe, secondly, the idea that change and development follow from the conflict of dialectical opposites, and thirdly, the notion that qualitative change supervenes upon the accumulation of quantitative changes. The relation of the preceding notions to the ethical tenets of Marxism has always been obscure. For the present purpose two only of the latter need be considered, the notion that knowledge should be utilised for social well-being, and the notion, seldom explicitly stated but constantly implied, of equality in rights between all sorts of human beings. These two notions have obvious religious affiliations, which however need not be discussed here.

Such are the fundamental notions that were to impinge on science in the present century. In the last century, however, in spite of Engel's conviction that dialectical material-

ism was pre-eminently a scientific philosophy, scientists themselves displayed little interest in it. They were, generally speaking, vulgar materialists in the Marxist sense, occasionally theist but usually not, and in either case not interested in dialectics. This situation persisted right up to the October Revolution, in Russia as much as in the rest of Europe. Dialectical materialism may have fired the revolutionaries, but pre-revolutionary Russian scientists were not very interested.

But with the October Revolution, changes began to occur. It is much discussed how far Lenin may have modified the older views of Marx and Engels. His debt to Russian nihilists such as Pisarev and Chernishevsky seems clear, and it is now that the notion of authoritative Communist teaching becomes increasingly emphasised. The views of Marx, Engels, Lenin himself, and later Stalin, begin to be quoted as incontrovertible, not only on social matters but even in science. The origins of this authoritarianism may go back a long way; it is possibly an offshoot of Russian Orthodoxy. Berdyaev, who spent some time under Soviet rule, has declared that 'all controversies in the sphere of theory, ideas and philosophy, and all disputes in the practical, political and economic world in Soviet Russia, are fought out under the banners of orthodoxy and heresy'. And indeed, after reading Lenin's assertion that from 'Marxist philosophy, which is cast from a single piece of steel, you cannot eliminate one basic premise, one essential point, without departing from objective truth', one recalls the words of Philoteus: 'Two Romes have fallen, but the third stands and no fourth can ever be'. The same peremptory note is sounded in Stalin's writings, where 'bolshevik axioms' are laid down from time to time, which scientists and others are expected to accept without further ado.

In addition to introducing a dogmatic tone, Lenin also makes Marxism a specifically Russian system of thought. To some extent, Marxism becomes interwoven with the panslavism that Khomyakov had developed in the early nineteenth century. Strong nationalist sentiments, however, do not intrude in the scientific field till rather later. More significant at first is the cultural effect of the great Russian

novelists. Lenin's works abound in literary allusion, which frequently takes the form of guying some opponent by pointing out his resemblance to some unlikable figure in Russian fiction. This method of controversy persists in Russia and is associated with a constant preoccupation with the motives, known or supposed, of the opponents in discussion, an interest nurtured by familiarity with the novels. And finally, another specifically Russian characteristic, even in the scientific field, is the tendency to the extravagant and grotesque. As early as the seventeenth century, the Croat Catholic writer Krijanitch, who lived for many years in Russia, had averred: 'We go to extremes and wander on the brink of precipices'; while Dostoevsky writes: 'Russians in general are broad in their ideas . . . broad like their land and exceedingly disposed to the fantastic and chaotic.' The weird trains of thought common in later Russian scientific literature, and in particular the fantastic atmosphere of the public scientific controversies, must be viewed against this background.

However, the changes for which Lenin is so largely responsible remained latent for some years after his coming to power. While the Russian universities were seriously depleted at the October Revolution, a sufficient number of scientists remained behind to guarantee continuity and to develop science under the new conditions. The outlook of these men, however, had been formed under influences different from those which now prevailed. They were almost all vulgar materialists and there is little perceptible difference between their writings under the Tsars and under Soviet rule.

It is in the 1920s that the impact of Marxism on science began to be felt. A new generation was now growing up in Russia that had been educated in dialectical materialism. It was inevitable that the younger scientists should start reassessing their science in the light of their philosophy, and the possibility of developing a specifically Marxist biology now became mooted. This new development was echoed outside Russia, and one encounters attempts to reconstruct science in a Marxist sense in the writings of Levy, Bernal, and for a time, Haldane, in this country, and of Prenant in France.

The principal developments, however, occur in Russia, and it soon became clear that Russian scientists were far from unanimous in their attitude to Marxist science. We may distinguish three categories of Marxist scientist at this time. In the first place there were the indifferent Marxists, such as Vavilov and Serobrovsky, mainly older men educated under the Tsars; they expressed a perfunctory adherence to dialectical materialism but took care that it did not influence their work in any way. Secondly, there were the moderate Marxists like Zhebrak and Zavadovsky; they, while accepting the substance of current scientific views, made a few alterations here and there to accommodate them better with Marxism. Lastly, there were the extreme Marxists, exemplified by Prezent, who advocated a radical recasting of science, particularly biology, in order to make it square on all points with dialectical materialism.

The three groups become clearly distinguishable in 1930, when the impact of Marxism on biology really begins. It was about this time that certain developments in Marxist philosophy in the Soviet Union provoked condemnation as resurrecting Menshevik idealism. Those responsible for this condemnation, their wits sharpened by their investigations, noted also that there were idealist trends in science, in other word, deviations from dialectical materialism. Biology, and especially genetics, were particularly suspect, and a warning to biologists was issued.

Meanwhile, the Ukrainian biologist Lysenko, who had earned a world-wide reputation for his work at Ganja in Azerbaijan on the physiology of plant development, was transferred to Odessa, where he entered into collaboration with the extreme Marxist Prezent. Lysenko's earlier writings betray little influence of Marxist ideas, but it seems that Prezent realised the potentialities of Lysenko's views; at any rate, Lysenko and Prezent proved a potent combination, and they opened a frontal attack on genetics in 1935 in a small book entitled *Plant Breeding and the Theory of Phasic Development*.

A violent controversy ensued, which culminated in a genetical congress held the following year at a session of the Lenin Academy of Agricultural Sciences. The older

biologists, mainly indifferent Marxists, were represented by such men as Vavilov, Director of the Institute of Plant Industry and of the Genetical Laboratory of the Academy of Sciences, Serebrovsky, Professor of Genetics at Moscow University, Koltsov, Director of the Institute of Cytology, Histology and Embryology of the Academy of Sciences, and Dubinin, who succeeded Koltsov on the latter's death a few years later. They were seconded by Muller, now Professor of Genetics at Indiana University in the United States, but at that time an admirer of Soviet science, and who had been working in Russia for some time past. These biologists assembled the evidence in favour of what we may now call Western biology, and assured their audience that they saw nothing in it to conflict with dialectical materialism. The moderate Marxists, represented by Zhebrak, a White Russian, Professor of Genetics at the Timiryazev Agricultural Academy, and Boris Zavadovsky, Director of the Moscow Pedagogical Institute, put forward a modified genetical system, in which various minor concessions were made to Marxist theory, but the day was carried by the fiery rhetoric of Lysenko and a subtle but telling address by Prezent; they, aided by the followers of Michurin, the famous Russian horticulturalist, and of Ivanov, a well-known stock breeder, persuaded the majority of the delegates that Western genetics was idealist, racialist and of no practical use.

It became apparent at this time that the theoretical struggle was inseparably linked with a conflict of personalities and with a concerted movement to oust the indifferent Marxists from their many scientific posts and to provide openings for the newer men who ranged themselves behind Lysenko. Thus, we find that Vavilov was the object of a bitter personal attack by Lysenko's followers. In 1939, after a second genetical conference, Vavilov was dismissed his posts, to be replaced at the Laboratory of Genetics by Lysenko, and at the Institute of Plant Industry by Eichfeld, an Estonian follower of Lysenko. At the same time, Prezent obtained the chair of Darwinism at Leningrad.

There was somewhat of a lull after these changes, but in 1946 the promulgation by Lysenko of the theory that members of the same species do not compete with one another,

which he claimed was a corollary of dialectical materialism, led to fresh developments. The moderate Marxists thought that Lysenko had overplayed his hand. Zhukovsky, Professor of Botany at the Timiryazev Agricultural Academy, showed, in an article aptly entitled *Darwinism in a Crooked Mirror*, that Lysenko's numerical data disproved his own case. Other moderate Marxists such as Schmalhausen, Professor of Darwinism at Moscow University, Yudintsev, the Dean of the Biological Faculty, and Zavadovsky, whom I have already mentioned, demonstrated in addition that Lysenko's views resurrected the anarchism of Kropotkin which had long ago been repudiated by the Bolsheviks.

By this time indifferent Marxism may be said to have become extinct in Russia, and the struggle now ranged between the moderate Marxists and the extremists. The strongholds of the former were at Moscow, and to a lesser extent, at Leningrad University, and, believing that Lysenko had provided them with a golden opportunity, the Biological Faculties at the two universities came out in condemnation of Lysenko's views, in particular his theory of lack of intra-specific competition. This move provoked a protest on the part of the Department of Dialectical and Historical Materialism of Moscow, whereupon the Biological Faculty petitioned the Rector of the University for a committee of enquiry on the grounds that the Department of Dialectical and Historical Materialism was incompetent. The committee was formed and reported unfavourably on the philosophers. Meanwhile an all-union conference on Darwinism was organised at Moscow University by Lysenko's moderate Marxist opponents. At the suggestion, apparently, of Zavadovsky, the conference adopted a manifesto that Marxist biologists had to wage a war against two deviations, against neo-Darwinism, social Darwinism and Malthusianism on the one hand, in other words Western genetics, and against idealism and Lamarckism, Lysenko's theories being implied, on the other. This manoeuvre attempted to turn Lysenko's flank, the extreme Marxist contention being that the struggle ranged along a single front only, that is between themselves representing Marxism in its integrity, and everybody else, representing bourgeois idealist deviationism.

The moderate Marxists had, however, miscalculated. Action against the Department of Dialectical and Historical Materialism was stayed by government order, and in July, 1948, a further genetical congress was arranged at the Lenin Academy of Agricultural Sciences, this time by Lysenko. Most of the speakers at this meeting were extreme Marxists and the total extirpation of Western genetics was called for. Only a handful of moderate Marxists were present and were received with overt hostility. After all the speakers had been heard, Lysenko arose for his final address, and prefaced his remarks by the announcement that his views had been formally endorsed by the Central Committee of the Communist Party. This announcement was followed by stormy applause passing into an ovation, the delegates rising to their feet. The same morning, there had appeared in *Pravda*, a letter to Stalin from Juri Zhdanov, son of Andrei Zhdanov of the Politburo. The letter took the form of a recantation of various theoretical errors committed by the author in opposing Lysenko. It was apparently not without effect on four of the moderate Marxists present at the conference, for three of these, Zhukovsky, Alikhanyan and Polyakov, asked permission to make formal recantation of their views after Lysenko's final address, while Zhebrak, one of Lysenko's most constant critics, wrote a letter of recantation to *Pravda* a few days later. The conference was followed by the dismissal of such eminent moderate Marxists as Schmalhausen, Zhebrak, Dubinin, YudinsteV, Nemchinov and Polyakov from their posts, to be replaced in every instance by Lysenko's men. After these charges it was obvious that further fundamental theoretical developments were no longer in the interest of Lysenko's party, and the efforts of an enterprising horticulturalist Makeev to out-lysenko Lysenko by grafting apples on conifers were received very coldly.

It is time now to ascertain more precisely on what grounds the Marxist attack on biology has been conducted.

Perhaps the most fundamental ground for criticism has been the Marxist notion of mind as a reflection of matter. The supposition that ideas have an intrinsic value independent of the material background of their proponents is a

commonplace in European thought, and, for that matter, in oriental thought too. But Marx, by insisting that ideas are primarily reflections of material conditions, ushered in a new form of analysis in which ideas are judged in the light of the material background of their originators rather than in respect of their intrinsic reasonableness. This form of analysis has played a fundamental role in the Soviet biological controversies and has fitted in well with the interest in human motivation and delight in literary allusion that is characteristically Russian. It has thus been easy to damn Western biology as capitalist, bourgeois, reactionary and contra-revolutionary. Even worse, it has been declared that it is also clericalist and fideist, since two clerics, the Anglican Malthus and the Catholic Mendel, have contributed fundamental ideas to it. The convention that fact and logic alone suffice for scientific discourse is too easily taken for granted. It is, on the contrary, a characteristic of certain cultures, in our own case inherited from the medieval scholastics. Even so, there are plenty of occasions, for instance in politics, where logical rigour is not always encouraged even here. The essentially allogical nature of this type of Marxist analysis does at times approach anti-rationality. Thus Zhdanov, in his letter of recantation, confesses that his 'criticism of Weismannism was weak and objectivist'. The implication is that objectivism is at fault and should be replaced by an approved partiality.

Scientific theories, in the next instance, are liable to fall short of the requirements of Soviet realism or materialism. Any theory that can be attributed to the excogitation of its author rather than to some observable property of material being, or any theoretical distinction that is not evidently based on a material difference, is liable to be termed formal, ideal, metaphysical, mystical, or scholastic. Such epithets are now applied by Marxists to the notion of the particulate gene, to the notion of hereditary constitution, and to such distinctions as between hereditary and acquired characters. It is natural that Soviet biologists should emphasise the importance of not going beyond the observable properties of material being. What strikes an outsider as odd, however, is the important role played in Communist biology by experi-

ments that, when repeated outside the Soviet Union, give negative results. The question of the truth or falsity of the Russian experiments is obscure. Although there have undoubtedly been fraudulent claims, and though some of the experiments such as the widely advertised tomato grafts have been repeated many times in other countries without results, it would be rash to deny out of hand that the Russians may have made some interesting new discoveries. But it is pertinent to note that most of the suspect facts, although brought forward as evidence in favour of Marxist biology, are also susceptible of other quite different interpretations. In contrast to these controversial facts accepted by Marxist biologists, other facts, generally accepted elsewhere, seem to have no place in Marxist biology. Hybrid maize, produced by intercrossing inbred strains, is perhaps the most important of these. The method of production has been denounced by Marxists as theoretically unsound and essentially a device of capitalist seed firms. However, the yields obtained have been so striking that the theoretical difficulties have had to be overlooked, and recent reports show that hybrid maize is now being grown in the Soviet Union.

The Marxist concept of causality has also given trouble. It has been urged by Lysenko that the notion of random behaviour governed by statistical laws is contrary to the Marxist notion of causality. He was indeed reminded by the moderate Marxists that the classics of dialectical materialism described chance as a form of the manifestation of the operation of law. The extreme Marxists however would have nothing of this. The eminent Russian mathematician Kolmogorov had showed that an attempted refutation of the laws of genetical segregation by Ermolaeva, a follower of Lysenko, was unsound on statistical grounds. This caused Lysenko much irritation and he retorted that 'we biologists . . . do not want to submit to blind chance, even though this chance is mathematically admissible. We maintain that biological regularities do not resemble mathematical laws.' It is obvious how near this statement too comes to irrationality. Rather later, the notion of random mutation has similarly been criticised as inconsistent with Marxist causality.

If we now pass on to the dialectics, the confusion grows.

The principle of the unity of opposites is urged against many of the distinctions of Western biology. It has already been noted that the distinction between acquired and inherited characters is regarded as unreal. The corollary is belief in Lamarckism, inheritance of acquired characters. This consequence was boggled at for some time by Marxist biologists due to the bad repute into which Lamarckism had fallen among biologists, but today Lamarck is openly lauded for his assertion of an essential Marxist tenet. It is interesting to recall in this connection that Kammerer, who committed suicide in 1926 after the dramatic discovery that his experiments to establish Lamarckism had been faked, had been offered a chair in biology at Moscow University. Other Western biological theories that have been condemned as contravening the principle of the unity of opposites are the notion that the hereditary determinants of a cell are mainly restricted to the nucleus—this deviation is called dualism or Weismannism, and quite recently the rider to the cell theory, *omnis cellula e cellula*, dubbed by the Russians Virchowism, has been condemned on similar grounds—a development, however, due to a lady, Lepeshinskaya, who claims that nucleated cells may arise from undifferentiated protein.

Little application has so far been made of the dialectical principle of development proceeding from the conflict of opposites. It has however been put forward as an explanation of hybrid vigour.

Nor is it necessary to concern ourselves long with the dialectical distinction between quantitative and qualitative change. It was not applied to biology till Lysenko introduced his theory that members of the same species do not compete. It became necessary then to establish a difference in kind between intraspecific and interspecific differentiation, so the first was described as quantitative only and the second as qualitative.

Of much greater general importance have been the ethical tenets of Marxism. Marxists are agreed that science should be applied to social well-being, a point of view that Bernal in particular has publicised in this country. It is a step from this to use practical utility as a criterion of truth. Lysenko has repeatedly urged that his practical results are

evidence for his theoretical correctness, while the academic nature of much Western biological work is urged to its discredit. There is, of course, much truth in the contention that practical applicability is a criterion of theoretical validity, but the exact connection is far from straightforward. In the case of the new Soviet biology, the situation is confused by the fact that Lysenko's practical claims have tended to be short-lived. This has suggested to his critics that frequent failures of specific practical proposals have been masked by the promptness with which Lysenko has introduced new diversions.

The notion of human equality has played a most curious role. Western genetics asserts the material inequality of man. For the Marxist, who recognises human values only in as far as they reflect material conditions, this entails an inequality in human rights. The only way out is to assert that acquired changes can bridge over all the genetical differences that distinguish men from each other, that is to say, one must accept an extreme form of Lamarckism. This is what Marxist biologists have done, and they assert that Western genetics inevitably leads to racialism and class warfare. Similar arguments are used in favour of Lysenko's theory that members of the same species do not compete. Arguing again from the notion that human behaviour must reflect material conditions, Lysenko avers that, were competition within the species admitted, then the way is open for justifying capitalist exploitation of the working class.

It is time to turn now to argument from authority which is so prominent in Soviet biological publications today. The views of Marx, Engels, Lenin and Stalin are frequently quoted in biological contexts as though their views were incontrovertible. To a lesser extent, similar use is made of the writings of Darwin, Timiryazev, the well-known Russian plant physiologist, the horticulturist Michurin, both of whom were patronised by Lenin, and latterly of Lysenko himself. It is unheard of now to encounter statements suggesting that the Marxist classics may be in error over any point, the most that is done is to suggest that the writings concerned are susceptible of some other interpretation. The dramatic use made by Lysenko of the approval of the Central

Committee of the Communist Party at the end of the 1948 session of the Lenin Academy of Agricultural Sciences has already been noted. Alikhanyan, in his recantation, also illustrates the authoritative role which the Party has assumed when he states that 'we must be on the same side of the scientific barricades as our Party and our Soviet science'. And Zhebrak, in his letter of recantation, is even more blunt: 'I, as a member of the Party, do not consider it possible for me to retain those views which are recognised as erroneous by the Central Committee of our Party'.

The authority of the Party line in science is thus clearly recognised. It is, however, curious to note that the Party line, as applied to science, has sometimes failed to synchronise. An example occurred in 1947. In this year a series of articles by English Marxists appeared in the *Modern Quarterly* explaining that Soviet Communism was a tolerant institution, benevolently encouraging genetical research both along the old and the new lines; and the names of Zhebrak and Dubinin, both of whom had recently contributed articles to the American journal *Science*, were mentioned as examples of Mendelian geneticists working without hindrance in the Soviet Union. Contemporary with this move, however, a furious attack on these same two scientists appeared in *Pravda* written by Laptev, who condemned Zhebrak out of hand for his 'disgusting role' in 'taking it upon himself to please the reactionaries of the whole world by defamation of his compatriot scientist [Lysenko] in the pages of a foreign journal inimical to us'. Dubinin comes in for equally strong language.

Fluctuations in the Party line have not passed unobserved in Russia. There is abundant evidence that Western genetics continued to receive official support some time after Lysenko had appeared on the scene, as claimed by Zhebrak in his letter of recantation, but this was indignantly denied by the editor of *Pravda* in his commentary on Zhebrak's letter.

The growing tendency in Russia to appeal to chauvinistic sentiment in relation to science is evidenced in the same article by Laptev. Cosmopolitanism in science is now stigmatised as a deviation to be fought till the 'rotten roots of obsequiousness and slavishness towards bourgeois culture'

are finally torn out. Prezent adopted a similar tone at the conclusion of his address at the 1948 conference when he declared the intention of the extreme Marxists to expose their opponents 'as adherents of an essentially false scientific trend, a pernicious and ideologically alien trend, brought to our country from foreign shores'.

I have outlined very sketchily the origins of Marxist biology in Russia. Its spread to other countries will have to be omitted. I will merely note in passing that it has many supporters in this country, in the main grossly uninformed, also in most countries in Western Europe and in Latin America, while in such countries as Bulgaria, Rumania and Czechoslovakia, Western genetics has been officially rejected. As might perhaps be expected, Yugoslavia tolerates both Western and Soviet genetics, while Chinese Marxist biology also appears to show some signs of independence.

It is obviously impossible in the limited time that remains to analyse in any detail the logical structure and internal coherence of Marxist science. I will content myself therefore with the following points.

The Marxist notion of mind as a reflection of matter appears to end ultimately in logical suicide, since it can clearly be used to establish any point of view whatsoever.

The materialist tenets of Marxism are sometimes regarded as thoroughly scientific. This is not so. They lay down, *a priori*, conclusions, such as the eternity of matter and the non-existence of spiritual substances, that are neither self-evident nor inductions from experience. In several instances, conclusions are asserted which experiment alone is competent to establish, and cases have been quoted where observation does not tally with the Marxist conclusion.

The denial of the legitimacy of such abstractly conceived forms as genetical constitution is also unsatisfactory. If the possibility of a form persisting through a sequence of changes is denied, the entire notion of an individual organism or person is undermined. The logical outcome of this line of thought is the theory of momentariness of Buddhist philosophy, substances being replaced by streams of disconnected atomic states. There is no doubt, however, that Marxists have no intention of pressing logic thus far.

As regards the strictly dialectical principles, even Marxists found it difficult to attach any scientific significance to these at first. As Levy wrote in 1934: 'the so-called laws of the dialectic, couched as they must be in very general terms, must have their principal application in the field of social and economic development. They appear to add little or nothing to the detailed methods of analysis that scientific workers have produced during the past century or so.' Marxist opinion, however, seems to have changed since then, and examples of how dialectics have been applied to biology have been cited earlier this evening.

In certain respects the criticisms of biological concepts that have been made on dialectical grounds are sound. The tendency to describe dynamic processes, such as all living systems are, in terms of sharply circumscribed static concepts is deserving of censure, though the criticism of this failing by Bergson is incomparably more powerful than Lysenko's. Nor does such criticism lead by default to dialectical materialism. And when dialectical notions such as the conflict of opposites are invoked to furnish biological explanations, then they deserve the same censure that dialectics had called down upon Western science. In other words, both systems fall into the error of misplaced concreteness, mistaking their abstract distinctions for entitative differences. The tendency of dialectical materialism to treat dialectical opposites as concrete entities is no new thing. The later scholastics did the same with their *contraria*, and were thoroughly trounced for so doing by van Helmont of Louvain, the father of experimental biology.

It is also relevant to point out that the whole notion of applying an historical induction such as the dialectical conflict to biology is illegitimate, just as it is when applied to philosophy. As Gilson shows, such historicisms lack any sound logical basis, and as far as biology is concerned no *a priori* patterns are admissible, only inferential descriptions of observations.

I think that the Russian Marxists have shown considerable acumen in their approach to the ethical dilemmas of dialectical materialism. If independent spiritual considerations are excluded, Western biology does lead to human inequality.

However, to resolve the difficulty by invoking an extreme form of Lamarckism, for which there is absolutely no evidence, is certainly not scientific. The only consistent alternatives appear to be human inequality or equality derived from transcendental spiritual values. That neither alternative is open to the Marxist is his misfortune.

The procedure of arguing from authority is of course widespread. It may be justified logically if the authority is infallible, but on no other grounds. It is thus possible to argue that a proposition otherwise undemonstrable should be accepted as true because divinely revealed. It is nonsense to expect a comparable attitude to a statement purporting to come from any other source. As the Catholic philosopher Sergeant put it many years ago in his penetrating critique of Locke, 'No Reasoners, how many, or of how Great Name soever they be, have any Authority at all but by Virtue of the Reasons they produce'. It is a matter of supreme indifference scientifically what anybody may have said, even though they be venerated as oracles in other fields, and this indifference in respect of the Marxist authorities is strengthened by the not infrequent disagreements between them, and by the various vacillations of the Party line.

I have made no attempt to consider how far dialectical materialism is logically consistent within itself. Its scientific excursus suggests that it is not; but I would point out that, far from constituting a weakness, internal inconsistency may be a source of strength. It is well known in logic that, from a contradictory proposition, all propositions follow. It is therefore possible to establish one position one day, and to overthrow it the next in favour of some other. This is apparently what has happened in the case of Lysenko's climb to power. But the possibility of further changes remains as before. Lysenko is as vulnerable to overthrow, possibly more vulnerable, than his predecessors. Whether he will remain in power will not depend on scientific considerations, and it is interesting to note that very recently, in a Soviet biological journal, Lysenko has, for the first time, indulged in self-criticism and confessed to various theoretical errors. The matter at issue was in itself trivial, but may presage the shape of things to come.