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Papers
on the Soviet Genetics
Controversy

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Resignation from the Academy of Sciences of the U.S.S.R.

by

SIR HENRY H. DALE, O.M., G.B.E., F.R.S.
Formerly President of the Royal Society, and of the British
Association for the Advancement of Science

London,
November 22nd, 1948.

To The President of the Academy
of Sciences of the U.S.S.R.,
Moscow.

MR. PRESIDENT,

I have come to the conclusion that I ought to resign the Honorary Membership of the Academy of Sciences of the U.S.S.R., to which I was elected in May, 1942.

When your distinguished predecessor, Academician V. L. Komarov, wrote to inform me of the honour thus conferred upon me, his letter made reference to the fact that I was then President of the Royal Society of London. I believe that many British scientists, indeed, recognised and welcomed my election at that time as the symbol of a community of purpose between the scientists of our two nations, which had then been engaged together for nearly a year in the war against Hitler's Germany in defending, as we believed, the freedom of Science, as of all man's proper activities, from the threat of an aggressive tyranny.

In that same year, 1942, the Royal Society of London elected Nicholas Ivanovitch Vavilov to be one of its fifty Foreign Members. With Lenin's support and encouragement he had been able, as first Director of the Lenin Academy of Genetics, to initiate and promote a rapidly-growing contribution, by research in the U.S.S.R., to that world-wide advance in the science of Genetics which had followed the recognition of Mendel's discoveries. His use of these opportunities was reputed to have been of great benefit to Agriculture in the Soviet Union; we desired to honour it as a great contribution to Science for the whole world.

It had been reported in Britain, however, already in 1942, that N. I. Vavilov had somehow fallen from favour with those who came after Lenin, though the cause of his trouble was still unknown ; we might have supposed it to be political, or otherwise irrelevant to his scientific achievement. Not till 1945 did the Royal Society discover that he had been dismissed from his position, had disappeared with a number of his co-workers in Genetics, and had died at some unknown date between 1941 and 1943. Repeated enquiries, addressed to your Academy by the Royal Society through all available channels, asking only the date and the place of his death, received no reply of any kind. I understand that the Royal Society has not yet been officially informed whether this distinguished Russian scientist was still alive at the time of his election to its Foreign Membership.

More recent events, of which full reports have come to hand, have made it clear what has happened. The late N. I. Vavilov has been replaced by T. D. Lysenko, the advocate of a doctrine of evolution which, in effect, denies all the progress made by research in that field since Lamarck's speculations appeared early in the 19th century. Though Darwin's work is still formally acknowledged in the U.S.S.R., his essential discovery is now to be rejected there. The whole great fabric of exact knowledge, still growing at the hands of those who have followed Mendel, Bateson and Morgan, is to be repudiated and denounced ; and the last few, who were still contributing to it in the U.S.S.R., have now been deprived of position and opportunity.

This is not the result of an honest and open conflict of scientific opinions ; Lysenko's own claims and statements make it clear that his dogma has been established and enforced by the Central Committee of the Communist Party, as conforming to the political philosophy of Marx and Lenin. Many of us, Mr. President, have been proud to think that there were no political frontiers or national varieties in a Science common to all the world ; but this is now to be separated from ' Soviet Science ' and repudiated as ' bourgeois ' and ' capitalistic '.

Decrees which the Presidium of your Academy has issued, on August 27th of this year, give effect only too clearly to this political tyranny. My old and honoured friend, Academician L. Orbeli, distinguished neurophysiologist of the school of your great Pavlov, is dismissed from his Secretaryship of your Aca-

demy's Department of Biological Sciences, because he has failed to anticipate your Decrees, in their restriction of all research and teaching in Genetics in the U.S.S.R. to this politically imposed orthodoxy. It remains to be seen whether such compliance with dogma is to be exacted in other departments of Science. So far, we know only that the Genetics encouraged by Lenin is now prohibited as alien to his political philosophy.

Since Galileo was driven by threats to his historic denial, there have been many attempts to suppress or to mutilate scientific truth in the interests of some extraneous creed, but none has had a lasting success ; Hitler's was the most recent failure. Believing, Mr. President, that you and your colleagues must be acting under a like coercion, I can only offer you my respectful sympathy. For my own part, being free to choose, I believe that I should do disservice even to my scientific colleagues in the U.S.S.R., if I were to retain an association in which I might appear to condone the actions by which your Academy, under whatever compulsion, is now responsible for such a terrible injury to the freedom and the integrity of Science.

With deep regret, I must ask you to accept my resignation.

Yours faithfully,

(Signed) HENRY H. DALE.

What Sort of Man is Lysenko ?

by

R. A. FISHER, F.R.S.

Professor of Genetics in the University of Cambridge

[EDITORIAL NOTE.—Professor Fisher's recent broadcast was a shortened version of the full paper as given here. This paper is published by the S.F.S. with the permission of the B.B.C.]

For some time scientific workers outside Russia have felt a certain curiosity as to what manner of man Lysenko can be. It has become known that under the impulsion of his attacks many Russian geneticists, and those among the most distinguished, have been put to death either with or without pretreatment in a concentration camp. Opinions, however, have varied as to whether he should be regarded as one or another of three obvious possibilities.

(a) He might be a scientist with extravagantly unorthodox views, impelled merely by vanity and self-assertion to wish to impose these on his countrymen, or possibly

(b) an ignorant peasant, genuinely concerned with the prosperity of Russian agriculture, and impulsively impatient with the work of more highly trained biologists, owing to his difficulty in understanding it, and its remoteness from immediate practical application. The third possibility

(c) is that he is an ambitious politician of a type likely to become prevalent in a system avowedly guided by a rigid ideology, who hopes to use the ideological dogmas to which he finds his colleagues committed as levers for his own advancement in the party and in the state.

The pamphlet containing his address last July or August to the *Lenin Academy of Agricultural Sciences* provides material for deciding how he should be classified. After examining his arguments I have no doubt that we cannot, as many have been inclined to do, describe him simply as a scientific crank, or simply as a wrong-headed yokel. His mind does not seem to work in either of these ways. I should like to quote some passages which have influenced me ; they also help one to understand his special jargon. Here is one from page 12 :

'The representatives of Neo-Darwinism, the Mendelist-Morganists, hold that the efforts of investigators to regulate the heredity of organisms by changes in the conditions of life of these organisms are utterly unscientific. They, therefore, call the Michurin trend in agro-biology Neo-Lamarckian, which, in their opinion, is absolutely faulty and unscientific.

'Actually, it is the other way round.

'First, the well-known Lamarckian propositions, which recognise the active role of external conditions in the formation of the living body and the heredity of acquired characters, unlike the metaphysics of Neo-Darwinism (or Weismannism), are by no means faulty. On the contrary, they are quite true and scientific.'

It seems that the author is much concerned as a partisan to establish a case; and that he thinks this can be done by bald and dogmatic assertion.

The only specific account of an experiment purporting to prove a scientific fact is in the concluding remarks. It is too long to quote, but it concerns a claim to have changed the heredity of a tomato variety by grafting. As scientific polemic the passage is quite effective—if one accepts the claim as true. But it does not occur to Lysenko to suggest that his hearers need not take his word for it. Tomatoes are not difficult to graft. If the effect claimed really follows, anyone within only one year could satisfy himself of the validity of Lysenko's discovery. Still more, if it has the practical value, which Lysenko elsewhere so strongly advocates as a first condition of scientific work, how eager he should be that all horticulturalists should avail themselves of his discovery, which seems to open so direct a door to remoulding our plants just as we wish. But the man is thinking only of his controversial point.

There are ugly passages in the address in which the President of the Academy seems to be showing his teeth.

'The Morganist-Weismannists, *i.e.*, the adherents of the chromosome theory of heredity, have repeatedly asserted—without grounds whatever and often in a slanderous manner—that I, as President of the Academy of Agricultural Sciences, have used my office in the interests of the Michurin trend in science, which I share, to suppress the other trend, the one opposed to Michurin's.

‘ Unfortunately, it has so far been exactly the other way round, and it is of that that I, as President of the All-Union Academy of Agricultural Sciences, may and should be accused. I have been wanting in strength and ability to make proper use of my official position to create conditions for the more extensive development of the Michurin trend in the various divisions of biological science, and to restrict, if only somewhat, the scholastics and metaphysicians of the opposite trend. As a matter of fact, therefore, the trend so far suppressed—suppressed by the Morganists—happens to be the one which the President represents, namely, the Michurin trend.

‘ We, the Michurinists, must squarely admit that we have hitherto proved unable to make the most of the splendid possibilities created in our country by the Party and the Government for the complete exposure of the Morganist metaphysics, which is in its entirety an importation from foreign reactionary biology hostile to us. It is now up to the Academy, to which a large number of Michurinists have just been elected, to tackle this major task.’

This admonition is quickly reinforced (p. 22) :

‘ But the condition in the Academy has now sharply changed thanks to the interest taken in it by the Party, the Government, and Comrade Stalin personally. A considerable number of Michurinists have been elected members and corresponding members of our Academy, and more will be added shortly, at the coming elections. This will create a new situation in the Academy and new opportunities for the further development of the Michurin teaching.’

Well, if Comrade Stalin personally wishes it, it would be political disloyalty, the most heinous crime in Russia, to wish otherwise.

Academician P. M. Zhukovsky seems to have been bold enough to complain of the neglect of genetics in Doctorate theses. Lysenko gives him this hint (p. 35) :

‘ True enough, theses with a Morganist tendency appeared more rarely than Academician P. M. Zhukovsky would have liked. But there are reasons for this. Under the influence of the Michurin criticism of Morganism young scientists with an insight into questions of philosophy have in recent years come to realise

that the Morganist views are utterly alien to the world outlook of Soviet people. In this light the position of Academician P. M. Zhukovsky does not look so good, seeing that he advises young biologists to pay no heed to the Michurinists' criticism of Morganism, but to go on developing the latter.'

It would seem that, gradually becoming aware that his arguments, and his supposed experimental proofs, are carrying no conviction, Lysenko is more and more reduced to overt threats (p. 39) :

' V. I. Lenin and J. V. Stalin discovered I. V. Michurin and made his teaching the possession of the Soviet people. By their great paternal attention to his work they saved for biology the remarkable Michurin teaching. The Party, the Government, and J. V. Stalin personally, have taken an unflagging interest in the further development of the Michurin teaching.'

The last sparks of intellectual freedom in Russia seem still to be surviving, but feebly and under cover (p. 14) :

' It is clear to us that the foundation principles of Mendelism-Morganism are false. They do not reflect the actuality of living nature and are an example of metaphysics and idealism.

' Because this is so obvious, the Mendelist-Morganists of the Soviet Union, though actually fully sharing the principles of Mendelism-Morganism, often conceal them shamefacedly, veil them, disguise their metaphysics and idealism with verbal trimmings.'

Evidently the Grand Inquisitor is not to be deceived by such concealed heresy. He is ready to stamp out the last spark.

No, I cannot believe in the light of this speech that the reward of Lysenko's triumphant career is the advance of scientific knowledge ; nor that it is the prosperity of poor peasants. The reward he is so eagerly grasping is Power, power for himself, power to threaten, power to torture, power to kill.

The Soviet Genetics Controversy

by

JOHN R. BAKER, D.Sc.

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[This paper appeared in *Time and Tide*, and is reproduced here by permission of the Editor. A fuller account of this controversy will be found in my book, *Science and the Planned State* (1945; Allen and Unwin (London); Macmillan (New York).]

Rather a tactless old genius wrote his defence of the Copernican system in the form of a dialogue in which the Aristotelian disputant was made to appear stupid. Unfortunately the Pope thought that satire was being directed against himself and naturally there was trouble with the Catholic Church. That was more than three hundred years ago, but we have never heard the last of it. Things are happening to-day that will change the perspective in which we view the familiar story of Galileo. It is no longer one man or one particular doctrine that falls under the ban of a central authority, but a major branch of science and all its exponents in a large country.

To become acquainted with the broad principles of genetics, the study of heredity, is a considerable undertaking: to grasp the idea that the earth moves round the sun is very much easier. It is for this reason that the significance of the Soviet genetics controversy may easily be under-estimated by many well-informed people who have not interested themselves in this particular subject. Genetics is the science that deals with the way in which variations are inherited from parents to offspring and to more remote descendants. This science, founded by Gregor Mendel in the garden of a Moravian monastery only 82 years ago, has become one of the most actively-pursued and exact of all the branches of biology. In 1902 an American named Sutton, who never made any other important contribution to knowledge, pointed out that the postulated 'genes' or factors of inheritance seemed to be handed on from parent to offspring in exactly the same way as the chromosomes, which were already well-known constituents of every living cell. Thus arose the science of cytogenetics, by a marriage between cytology (the study of cells) on

the one hand and genetics on the other. This science, which owes so much to T. H. Morgan and his collaborators, reached its culmination in 1934, when the cytologist Painter, of the University of Texas, proved by ocular demonstration that the genes are in fact arranged in linear order along the string-like chromosomes, as had long been surmised by geneticists on theoretical grounds as a result of their experiments in hybridization.

The way in which the genes are passed on by the chromosomes is complex, but our understanding of it is remarkably accurate and complete. The main facts—the Mendelian 'ratios', or proportions in which various kinds of offspring are produced, in all their complex variety—are as firmly based as any of the facts of biological science. He who doubts has only to make for himself the necessary hybridizations and tabulate the characters shown by the descendants.

The general principles of inheritance are the same in nearly all plants and animals, and geneticists therefore devote their attention chiefly to organisms that breed rapidly and are easily reared in the laboratory. It cannot be doubted that eventually, when the young science has grown to maturity, it will become of great practical value, and already it is playing its part in agriculture and medicine. Such a complex subject, however, does not lend itself all at once to applications. Great changes in the practical affairs of mankind often spring from the work of scientists who are simply interested in getting new knowledge for its own sake. To Rutherford more than to any other single man is due the invention of the atomic bomb and to him will be due the useful exploitation of atomic energy; yet he himself, who valued science as an end in itself and studied atoms because he wanted to know their structure, regarded as absurd the suggestion that people would one day use his discoveries in obtaining a new source of energy for practical purposes.

In the early days of the Soviet régime, genetics was pursued as a matter of course. The authorities did not at first interfere with the day-to-day investigations of research-workers; but central control at last made itself felt in the place where, more perhaps than anywhere else, its effect is fatal—the laboratory. It was explained to scientists that it was not their job to discover truth (that was an idealistic, bourgeois fallacy), but solely to serve the material wants of man; and this they could do only by sub-

mitting to a rigid system of central control. Needless to say, this meant that scientific research would eventually be directed by politicians through their favourites among the scientists. This is exactly what happened, and events have hit genetics harder than any other science. Partly by reintroducing some old agricultural practices as though they were his own marvellous discoveries and partly by being careful to talk the language of dialectical materialism, one Lysenko has so imposed upon the Soviet authorities that finally they have handed over the control of a large section of biological research to him. And Lysenko happens to be ignorant of the science of genetics.

If for a particular reason some one wishes to defend the publications of an ignorant and foolish scientist, he will nearly always find it possible to do so. Carefully guarding himself against future trouble by an inconspicuous sentence or two (' I disagree with X. on many points ', etc.), the defender can explain that neither he nor the opponents of X. have read the whole of X.'s writings ; till that has been done (he may argue) no useful opinion can be formed. Then again, plants and animals are very diverse ; X. may indeed be wrong about the particular organisms he has studied, but there are others (bacteria, etc.) to which his ideas apply ; perhaps one day we shall find that these ideas have wider application. Through careful argument along these lines, expressed with every appearance of sweet reasonableness, people who are ignorant of the matter may be persuaded that this is a case in which the wise man or woman withholds judgment : the pros and cons are nicely balanced and we must leave the decision to the future. This is the technique that was adopted by Prof. J. B. S. Haldane in his recent broadcast on Lysenko.

In science it is repeatedly necessary to form an assessment of the reliability of the work of another scientist, though it scarcely ever happens that we have read the whole of his writings. Even a little that is obviously untrue, illogical or confused will rightly prevent us from accepting his conclusions. It is, therefore, desirable to correct the misleading impression given by Prof. Haldane by quoting a few actual statements of Lysenko :—

- (1) ' When he grasps Bolshevism, the reader will not be able to give his sympathy to metaphysics, and Mendelism definitely is pure, undisguised metaphysics.'

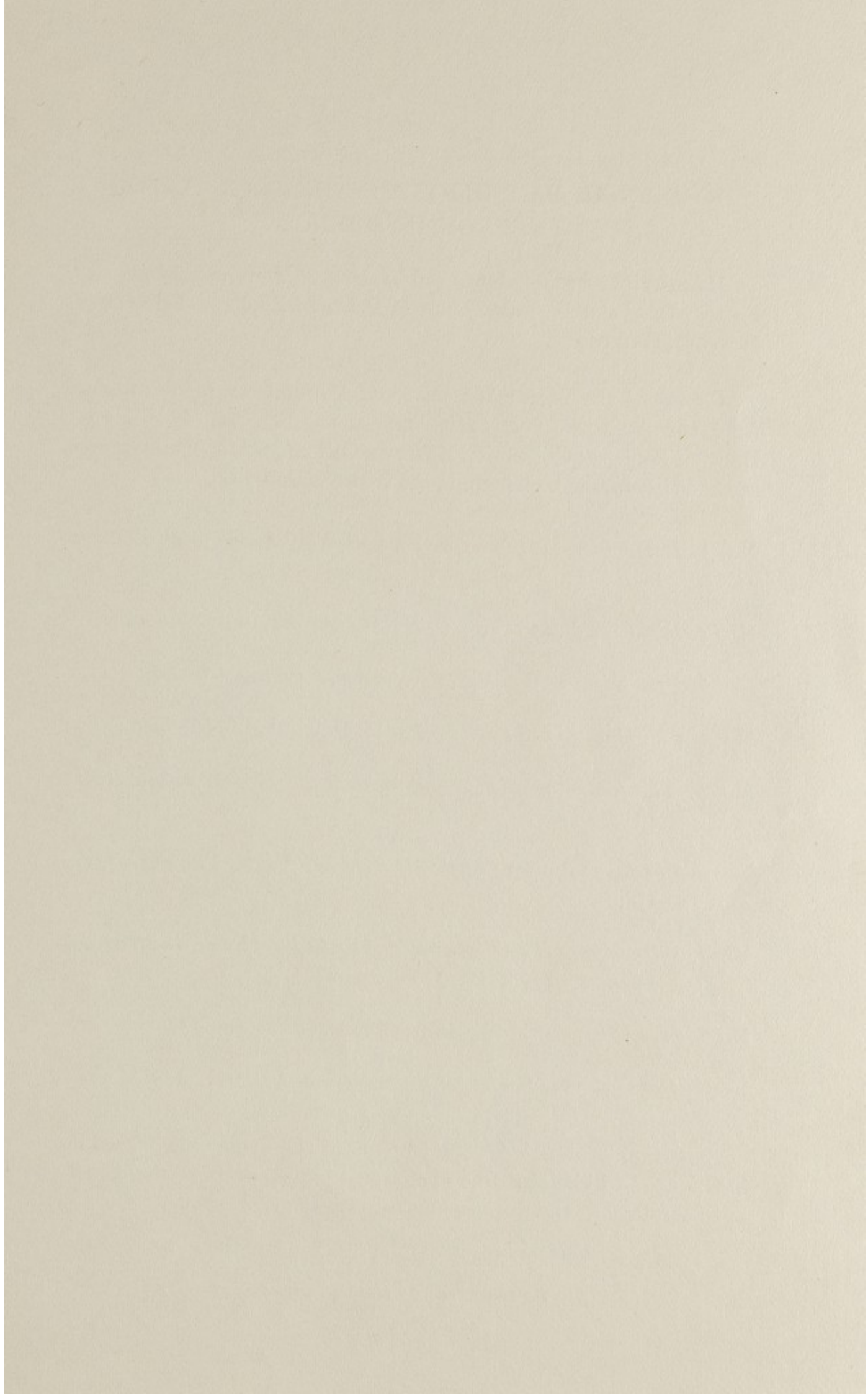
- (2) Lysenko refers to the 3 : 1 ratio (the most familiar of the Mendelian ratios) as ' the work of a devil '.
- (3) ' It is possible to defend the false bases of Mendelism only by lies . . . the teaching of Mendel and Morgan I cannot call anything but false.'
- (4) ' The only thing left from the so-called Morgan chromo- theory of inheritance is the chromosomes, and the whole theory of Morganism collapses.'
- (5) ' In order to get a particular result, one must want to get exactly that result ; if you want to get a particular result, you will get it.'

These statements should be quoted to everyone who was misled by Prof. Haldane's appearance of reasonableness. I should be happy to provide an exact page-reference to each of them (and to plenty of others) in the original Russian. It is clear that Lysenko denies the validity of the whole of genetics and of the chromosome theory of heredity. *To pretend that we should exercise a delicate balance of judgment in Lysenko's case is disingenuous and false : the man is ignorant not only of the elementary facts of science, but also of scientific method.*

Lysenko is now in control. The study of genetics (as that word is understood in the Western world) is forbidden throughout the Soviet Union. Does Prof. Haldane (himself a distinguished geneticist) care at all? In his broadcast he gave no indication that the fiasco of his subject in the U.S.S.R. and the predicament of the Soviet geneticists trouble him in the least. His attitude is incomprehensible to many scientists : it is as though the composition of music had been made impossible in a foreign country through the activities of a man who could not play a scale, and Benjamin Britten had rallied to that man's support. But the actions of communists are incomprehensible only to those who do not take the trouble to comprehend communism. *Pravda* makes everything clear in an article on this very controversy. How (the editor of that journal asks) could a situation have arisen in which many biological institutes in the Soviet Union formerly opposed the teaching of Lysenko? ' This occurred above all because the Presidium of the Academy of Sciences and the Bureau of the Biological Department forgot the most important principle in any science—the Party principle. They pegged themselves to a

position of political indifference and "objectivity". The U.S.S.R. Academy of Sciences forgot the instructions given by V. I. Lenin that "partisanship" is inherent to materialism.' Prof Haldane did not forget.

No general history of science can reasonably omit the story of Galileo. We are to-day in the presence of something even more momentous for the history of science and of scientific method—something that will take a still more prominent place in the history-books of the future : an event exhibiting even more clearly the absurd situation that arises when central authority blunders into interference with the freedom of science.



OCCASIONAL PAMPHLETS OF THE SOCIETY FOR
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- No. 1. *Is the progress of science controlled by the material wants of man?* By F. Sherwood Taylor. 1945. 1/6.
- No. 2. *Rights and duties of science.* By M. Polanyi. 1945. 1/9.
- No. 3. *Free science.* By Warren Weaver. 1945. 4d.
- No. 4. *The planning of science.* By M. Polanyi. 1946. 1/6.
- No. 5. *The future of science and technology.* By N. S. Hubbard. 1946. 1/6.
- No. 6. *The foundations of academic freedom.* By M. Polanyi. 1947. 1/6.
- No. 7. *Science pure et science appliquée, à la lumière de l'histoire des sciences.* 1948. By J. Pelseneer. 1/-.
- No. 8. *Soviet Science.* 1948. From *Pravda* (translated). (No charge).
- No. 9. *Papers on the Soviet genetics controversy.* 1949. 1/3.

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