cised in two sorts of ways. On the one hand, it may be said that the facts he starts with are wrong, or, if right, are made to depend from hypotheses that lead to unfulfilled predictions. It is altogether proper that criticisms of this sort should be made, and so they have been. On the other hand, it may be argued that speculation of this degree of rarefaction is in itself a somewhat disreputable activity, stifled at birth or by early training in those with a better-developed sense of scientific propriety. This is a most mischievous attitude of mind. All sciences, as would-be organised bodies of information, have to counteract the pressure of a sort of intellectual entropy —that is, the dissipation of knowledge into a rabble of particular unrelated facts. Integrative thought of the sort and on the scale indulged in by Darlington is an essential corrective to this tendency; it is all that prevents biology or, indeed, any science, from deteriorating into a mere taxonomy of scientific facts.

P. B. MEDAWAR

SOVIET GENETICS. By Alan G. Morton. London. Lawrence & Wishart. 1951. Pp. 174. 15s.

Dr Morton's book is described on the dust-cover as an unbiased account of the Michurinist theory of heredity with supporting scientific experiments. The author does not claim years of experience in Genetics or plant breeding, and thus he is free from the necessity of believing in any one theory of heredity. He should be able to make a perfectly balanced statement.

Despite the difficulty of penetrating " the curtain of ignorance and misunderstanding with which the Soviet Union is unfortunately so frequently surrounded ", the Michurinist theory is now familiar to most geneticists outside the U.S.S.R. But it will be new to most readers to learn that the regularities of Mendelian ratios—including the precise segregation in the tetrads of pollen grains and reproductive spores of some fungi—are now accepted by Michurinists. Clearly, since 1950, Soviet scientists have benefited from foreign travel. They still deny, however, the existence of determinant particles or genes and explain Mendelian segregation as the " result of the destabilised or shaken heredity caused by hybridisation "

Turning to the facts on which the Michurinist theory is based we find the true and orthodox Mendelian statement on page 96 that the red tomato fruit is dominant to yellow, and yet on page 101 we find: " Of 633 control fruits in F_1 all were yellow." Has F_1 taken on a new meaning in Michurinist experiments or have the controls been shaken by mistake? Unfortunately it is impossible to decide even after repeated reading. But some experiments are described without such ambiguities. For example there is Khachaturov's (1939) selective fertilisation in Tobacco. First generation hybrids were self-pollinated with amounts of pollen on each pistil varying from five grains to a large mass. The second generation hybrids derived from the large mass of pollen were " rather uniform in height, earliness and appearance ". " The plants from the low pollen fertilisation were much less uniform in character, and half of them were of types not found among the normal F_2." This is a very interesting and important demonstration of the effect of selection on the male gametophyte. Dr Morton concludes: " These data are at variance with accepted Mendelian ideas of the ' purity of the gametes '." If this is the author's personal interpretation he has failed to grasp the elements of Mendelism; if it is an inspired conclusion it has

not been brought into line with the now accepted reality of precise segregation in the tetrad.

D. LEWIS

SCIENTIFIC SESSION ON THE PHYSIOLOGICAL TEACHINGS OF ACADEMICIAN I. P. PAVLOV. Academy of Sciences and Academy of Medical Sciences. 1951. Moscow: Foreign Languages Publishing House. 174 pp. 2s. 6d.

This pamphlet reports in an official translation some of the papers given in a discussion of the present position of Pavlov's teaching in the U.S.S.R. The speakers show that Pavlov's work agrees in all points with the principles of Lenin and Stalin and also of Michurin and Lysenko. They assert that nevertheless much work on nervous physiology is now being carried out by Academician Orbeli and his disciples which disregards Pavlov's principle and " Michurinian biology ", adhering rather to " formal geneticist views ". In reply to these criticisms Orbeli is said to have made a statement admitting " the erroneousness of his first speech ", but failing to " give a lucid criticism and analysis of his errors ". Orbeli's statement is not reported but this was the wording of the resolution of the Academy of Sciences which concluded the session and demanded the reform of all physiological teaching and research in the U.S.S.R. No dismissals were recommended on this occasion but it was resolved to have annual conferences in future to continue the discussion.

C. D. D.

AGROBIOLOGIE. By T. D. LYSSENKO. Arbeiten über Fragen der Genetik, der Züchtung und des Samenbaus. Redaktion der Deutschen Ausgabe. W. Höppner. 1951. Berlin. Verlag Kultur und Fortschritt. Pp. 1-670.

A German translation of the collected essays and addresses of T. D. Lysenko beginning with " The Theoretical Bases of Jarovisation " in 1934 and concluding with " J. W. Stalin and the Michurinite Agrobiology " in 1949. There is a bibliography of the author's hundred most important papers from 1923 to 1947 prepared by I. J. Glushchenko.

SONS AND DAUGHTERS. Roger Pilkington. 1951. London: Allen & Unwin. 214 pp. 18s.

This book is an attempt to introduce to a general but intelligent audience the facts of development and heredity (in that order) as they apply to man. The author's understanding of the fundamentals of the subject is much deeper than his delightfully vivacious manner would suggest to the soberly technical reader. He really believes in genetics although he misses some of its finer points, for example the effects of inbreeding on populations. He spells H. J. Muller's name wrong and he makes Francis Bacon a contemporary of Isaac Newton. His notions that the chromosomes were discovered in the twentieth century is a more serious post-dating. And the reviewer sheds a tear to see two-strand crossing over considered more suitable than four: after all crossing-over, correctly described, is easier to understand than the implantation of the ovum; and it is of greater consequence for life. Otherwise Pilkington's treatment is penetrating and sound and his information abundant and up to date. His 39 photographs are a joy to see.

C. D. D.