

SOVIET GENETICS

Soviet Genetics, by Alan G. Morton, B.Sc., Ph.D. (174 pp. Lawrence & Wishart. 15s.)

SINCE the great genetics controversy arose, now many years ago, condemnation of Soviet biological theory has developed into a weapon of the cold war against the Soviet Union and the most fantastic attacks are launched without any attempt to examine the evidence for Soviet views. Dr. Morton has the merit of presenting the first full length account of the scientific experiments on which the Michurinist views are based and of the agricultural techniques which have been developed in the U.S.S.R. as a result. This authoritative exposition and discussion of Soviet work by a skilled biologist, citing over 100 scientific papers studied in the original, is more than a report, it is itself a study of and contribution to the whole problem. It is a sub-

ject of vastly more than specialised interest but the non-specialist must be prepared for some careful reading, for the author makes few concessions to the reader regarding scientific terminology.

Dr. Morton is not primarily concerned with the sterile polemic that has developed over here, but before dealing with the experimental data he has a short introductory chapter in which he puts this controversy into perspective, particularly stressing that the attack on Mendelian theory in the U.S.S.R. did not arise in any artificial way but directly from the interplay of theory and practice in the development of socialist agriculture in the U.S.S.R. The enormous practical scale of this testing can be seen from the example that, since Lysenko's first successful use of vernalisation of winter wheat in 1929, already by 1933 more than half a million acres were sown with vernalised wheat and in 1941 more than 25 million acres.

The victory of the Michurinist trend in Soviet biological theory developed during the years 1938-1948 on the basis of practice and culminated in the famous meeting of the Lenin Academy of Agricultural Sciences in 1948 in which some 700 leading scientific workers took part. Dr. Morton not only disposes of the

contention that the endorsement of the conclusions of that conference by the Soviet Government and the Communist Party was based on non-scientific 'ideological' grounds, but devotes a chapter to the theory of the gene in which he reinforces the biological arguments against the position of Mendelian genetics by an outline of the fundamental theoretical criticism on the basis of dialectical materialism. For the bourgeois scientific reader, however, it would perhaps have been better to deal with this after discussion of the experimental data, which the subsequent chapters discuss in detail.

Dr. Morton begins this by considering the evidence for the Michurinists' claim that the hereditary nature of plants can be altered in a directed manner by controlled changes in the environment. He begins with vernalisation and the hereditary transformation of winter wheat into spring wheat, showing how this leads to the phasic theory of development, each phase in the development of the organism requiring a specific complex of environmental conditions and forming also a condition for the succeeding phase. In contrast to the Mendelian view, Michurinist genetics shows the inseparable unity of the organism and its environment. At the same time the experiments show that hereditary variation arises only when the norms of the specific metabolic phases are disrupted but that this does not take place under all conditions so that changes in the metabolism of the organism are not necessarily or readily transmitted to the reproductive cells.

It is impossible to summarise here the experimental work dealt with by Dr. Morton. What is important

is that he not only acquaints us for the first time with the details of the work on such subjects as inbreeding, hybrid vigour, intra-varietal crossing, vegetative hybrids, multiple fertilisation, etc., but shows us how the results obtained led to a progressive development of the Michurinist theory and inspired fresh researches. There follows a chapter on heredity and nuclear structure, which presents a powerful destructive criticism of the chromosome theory of heredity but which is less convincing in showing that, as he says, 'Michurinist theory is capable of giving a biologically more consistent explanation of hybrid segregation'.

Finally, Dr. Morton has chapters on Michurinism and Agriculture and on the Scientific and Social Significance of the new theory. In contrast to the fact that outside the U.S.S.R. the practical methods of plant and animal breeders are largely empirical and derive little from genetical theory, in the U.S.S.R. the Michurinist methods are being employed and tested on a tremendous scale. Besides the older research institutes there are over 70 State Selection Stations, covering all soils and climates, each with 4-500 acres. New varieties of crops are rapidly adopted over millions of acres, new techniques such as that of additional pollination are tested by hundreds and thousands of collective farms. Dr. Morton notes that the Soviet people are convinced that Michurinism has completely justified itself in the hard test of practice, that they regard it as a triumph of socialism and a vital weapon in their great programme of advance towards Communism.

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