Book Reviews[1]

The science of biology today. Trofim Lysenko. New York 16, N. Y.: International Pubs., 1948. Pp. 62. $1.25.

On July 31, 1948, Academician Trofim Lysenko delivered his presidential address to the V. I. Lenin Academy of Agricultural Sciences in the USSR. That address forms the substance of this small book. It must indeed be read to be believed.

The address began with a dissection of Darwinism in the light of the opinions of Marx and Engels. Soviet scientists are strong Darwinists. They acknowledge, to be sure, the existence of certain errors in Darwin's thought, traceable chiefly to the pernicious, "reactionary" influence of Malthus. In plain language, what the Soviet Darwinists reject is the Theory of the Struggle for Existence within species and of the Survival of the Fittest. What remains of Darwinism after this evisceration is the theory of the effects of use and disuse in modifying hereditary characteristics, and the elaborate and completely unsupported theory of pangenesis.

Having made Darwin equivalent to Lamarck, Lysenko passed on to demolish the ideology of his *bête noire*, August Weismann. Having done this to his satisfaction, he posed the question of the inheritance of acquired characteristics, said flatly that the Lamarckian propositions are "quite true and scientific," and interpreted them as equivalent to maintaining that the "qualitative variations of the nature of plant and animal organisms depend on the conditions of life which act upon the living body, upon the organism." Having completed this *tour de force*, it follows that "the Mendel-Morgan teaching, which is metaphysical and idealist in its essence, denies the existence of such dependence, though it can cite no evidence to prove its point." The essence of "idealistic" error is to divide "the living body into two separate substances: the mortal body (or soma) and an immortal hereditary substance, germ-plasm."

In subsequent passages the evolutionary views of the great Russian morphologist Schmalhausen were attacked and the studies of population genetics conducted by Dubinin and his associates were ridiculed as sterile and impractical. This paved the way for the apotheosis of Michurin, Lysenko's own guide and mentor, and introduced the subject of vegetative hybrids. Michurin has claimed that: "Any character may be transmitted from one strain to another by means of grafting as well as by the sexual method." One "shakes" the nature of a vegetable organism by various means, renders it plastic in heredity, and then by grafting induces a transfer of characteristics.

[1] Complete index to all book reviews is given on pages 429–430.

Having deplored the teaching of Mendelian-Morganian genetics in Soviet universities and institutes, Lysenko stated that "under the influence of Michurian criticism of Morganism young scientists with an insight into questions of philosophy have in recent years come to realize that the Morganist views are utterly alien to the world outlook of Soviet people." At least, they knew on which side their bread was buttered!

The one piece of evidence for his views actually mentioned by Lysenko in this address was the conversion of hard spring wheat (durum) into soft winter wheat (vulgare), at a single step, after two to four years of autumn planting. It is difficult to see what this genome mutation from a 28-chromosome wheat to a 42-chromosome wheat has to do with the argument for the inheritance of acquired characteristics. "Classical" geneticists are selecting adaptive mutants by means of environmental conditions in hundreds of laboratories. The real question, which is whether such mutants fail to appear or appear with a lower frequency in the absence of the said conditions, is a question which Lysenko avoided altogether.

At this point the speaker ended. A discussion ensued, and Lysenko arose to answer a specific question regarding the attitude of the Central Committee of the Communist Party toward his report. The answer: the Committee had examined his report and had approved it. In other words, Lysenko's doctrines were completely victorious. The debacle of scientific reason which followed was complete—expurgation of reactionary genetics from all textbooks, reorientation of university staffs, purging of noted geneticists and evolutionists, hurried recantations by middle-of-the-roaders before it was too late.

In his concluding remarks Lysenko outdid himself. ". . . Heredity is inherent not only in the chromosomes, but in any particle of the living body . . . for heredity is determined by the specific type of metabolism. You need but change the type of metabolism in a living body to bring about a change in heredity." Lysenko brought forward as evidence a tomato plant. It was a vegetative hybrid between a strain with entire leaves and red fruit, used as the stock, and another with pinnate leaves and yellow fruit, used as the scion. Most of the plants from the seeds produced by this graft hybrid were like the stock or scion on which they were borne. But six plants from seeds borne on the stock had pinnate leaves and yellow fruit. And this was reported to have happened again in some seeds produced by normal entire-leaved, red-fruited F_1 plants derived from the stock. This interesting report ignores all the previous work done on graft hybrids, begun by Winkler in 1907, and the discovery of chimeras so produced, in 1910. The one new claim, which should certainly be checked by workers elsewhere, is that a chimeral condition can be transmitted

through the seed for several generations. But, of course, Lysenko himself does not believe in chimeras.

The final blasts on this notable occasion were directed at the dependence of Mendelism-Morganism on chance. It is imperative to quote these statements, which illuminate the entire Soviet attitude toward science:

"All the so-called laws of Mendelism-Morganism are *based entirely on the idea of chance.*"

" 'Gene' mutations . . . appear fortuitously . . . the direction of the process of mutation is also fortuitous. Proceeding from these invented fortuities, the Morganists base their experiments, too, on a fortuitous choice of substances that might act as mutation factors, believing that they are thereby acting on their postulated hereditary substance, which is just a figment of their imagination, and hoping thereby to obtain fortuitously what may by chance prove to be of use. According to Morganism, the separation of the so-called maternal and paternal chromosomes at reduction divisions is also a matter of pure chance. Fertilization . . . does not occur selectively, but by the chance meeting of germ cells. . . .

"*On the whole, living nature appears to the Morganists as a medley of fortuitous, isolated phenomena, without any necessary connections and subject to no laws.* Chance remains supreme."

"Unable to reveal the laws of living nature, the Morganists . . . reduce biological science to mere statistics. . . . Mendelism-Morganism is built entirely on chance; this 'science' therefore denies the existence of necessary relationships in living nature and condemns practical workers to fruitless waiting. There is no effectiveness in such science. With such a science it is impossible to plan, to work toward a definite goal; it rules out scientific foresight. . . . Physics and chemistry have been rid of fortuities. That is why they have become exact sciences. . . . *By ridding our science of Mendelism-Morganism-Weismannism we will expel fortuities from biological science.* We must firmly remember that *science is the enemy of chance.*"

"Long live the party of Lenin and Stalin, which discovered Michurin for the world and created all the conditions for the progress of advanced materialist biology in our country." (Italics in original.)

BENTLEY GLASS

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The Royal Society Empire Scientific Conference, June–July 1946. (2 vols.) Edinburgh, Scotland: Morrison and Gibb Ltd., 1948. Vol. I: 828 pp.; Vol. II: 707 pp. (Illustrated.) 2: 2: 0 net.

The Empire Scientific Conference had its beginnings in discussions by representatives of the British Ministry of Supply and the British Commonwealth Scientific Office in Washington with representatives of the Royal Society. Following a conference called by officers of the Royal Society and attended by representatives of Canada, Australia, New Zealand, South Africa, and India, a British Commonwealth Science Committee was set up under the chairmanship of Sir Henry Dale and with Dr. Alexander King as Secretary. The report of this Committee, published in April 1943, proposed an Empire Scientific Conference to be convened as soon as possible after the war. In January 1945, expenses for the Conference were allocated by the Treasury in the amount of £15,000. A Policy Committee for the Conference began work early in 1945 under the chairmanship of Sir Alfred Egerton. The Conference itself took place June–July 1946, in London, Cambridge, and Oxford. There were 114 delegates representing different countries within the British Commonwealth. The larger delegations included: Australia—9, Canada—15, India—14, South Africa—7, and United Kingdom—38. The Steering Committee, composed of 12 leading scientists, included Sir Robert Robinson, president of the Royal Society, and the four other chief officers of the Society, and was under the chairmanship of Sir Henry Tizard. The Conference was organized mainly around 15 major scientific topics for each of which a steering group was appointed with a chairman, a recorder, and from six to ten other representative scientists as committeemen. The first three days were devoted to a stock-taking review of scientific organization: 1) in the United Kingdom; 2) in Canada, New Zealand, and the Colonial Empire; and 3) in Australia, South Africa, and India. Volume I, pages 43–298, presents the prepared papers, discussions, charts, and tabular matter relative to the organization of scientific research and much concerning current (1946) research.

In reviewing such a large report it is possible only to give an outline. Six of the fifteen main topics of the Conference are reported in about 500 pages of Volume I. These topics in order are: A—Outstanding Problems in Agricultural Science in the Empire; B1—Medical Science: Physiological and Psychological Factors Affecting Human Life and Work under Tropical Conditions and in Industry; B2—Etiology and Control of Infectious and Transmissible Diseases, particularly those which are insect-borne; C—Science of Nutrition, including Nutritional Status of the Indigenous Peoples of the Colonies; D—Aerial Mapping, including the Use of Radio Technique in Ordnance Survey; and E—Measures for Improving Scientific Information Services, including Indexing, Abstracting, Special Libraries, and Microfilms. Each of these sections begins with a listing of the personnel of the steering group, followed by a brief digest of the report on the subject, a general statement, and finally, the Conference recommendations in reference to research and further development.

Nine topics, to which as many full morning sessions were devoted, are reported in Volume II. Briefly listed, these topics were the following: F—Interchange of Scientists, including Discussion on the Future of the Scientific Liaison Offices That Have Been Established during the War; G—Empire Cooperation in Science with Existing and Projected International Organizations; H—Physical Standards and the Use of Units, Terms and Symbols; I—Collection and Interchange of Scientific Records and Experimental Materials, including Discussion of Risks