tempt to re-examine and discard a number of the fundamental postulates of our science.

The Soviet Government has never interfered in the discussions of genetic questions which have now been raging for some ten years. Academician Lysenko was rewarded for his work in the field of practical scientific farming and not for his views or experiments on genetics. Furthermore a number of our geneticists and plant breeders—some of whom have developed new varieties of the chief grain crops (Konstantinov, Lisitsin, Shekhurdin, Yuriev, the present writer and several others) and who have sharply criticized Academician Lysenko's views on genetics and selection—have also been decorated by the Soviet Government.

These facts should serve to show that Academician Lysenko's criticism of genetics, based as it is on naive and purely speculative conclusions, despite the vigor of its assault is incapable of impeding the onward march of genetics in the U.S.S.R.

The fact that Academician Lysenko is director of the Institute of Genetics of the Academy of Sciences does not mean that other schools of Soviet geneticists are in any way hampered in their work. It would be wrong to deny that Academician Lysenko has influenced the development of genetics in the U.S.S.R., but this influence has been exerted in open debate between proponents of different scientific views and principles and not by political pressure, as described by Professor Sax.

The way in which science has developed in the U.S.S.R. combines centralized planning with the creative endeavor of individual, decentralized laboratories. The present war has witnessed a tremendous development of science in our country, especially pure science. In the course of just over a year (up to December, 1944) four new academies were established—the Academy of Medical Sciences, the Academy of Pedagogical Sciences, the Uzbek Academy of Sciences and the Armenian Academy of Sciences. Science is also well developed in our universities and other schools of learning.

From this outline, it can be seen that science can be free in a centralized socialist state, which Dr. Sax wrongly calls totalitarian. Professor Sax does not understand the essence of the Soviet conception of the bonds between pure science, its application and philosophy, according to which the materialist philosophy of nature can only develop on the basis of the development of the various sciences; he therefore incorrectly states that in our country "science must conform to political philosophy." Because of this lack of understanding he failed to realize that the statements of Lysenko concerning the supposed refutation of Mendel's laws on the basis of dialectic materialism have little in common with the serious development of philosophy in the Soviet Union. Dialectic materialism is based on real facts and never denies them. Therefore the philosophy of dialectic materialism, when truly understood, can not possibly hinder the development of genetics. This philosophy, on the contrary, is a powerful weapon in the hands of the scientist who has thoroughly mastered it, and one which helps him to solve the most complicated theoretical problems.

The quotation of Professor Sax from "Science and Society" reflects a mistaken view on the part of the editors of this journal. In his speech made in 1939, Academician Mitin expressed entirely his own views, and not in any way the viewpoint of the Soviet Government.

The undoubted strength and vitality of the Soviet Government is due to that of its founder, Lenin, who himself had a long training in science and the philosophy of dialectic materialism, and of its present leader, Stalin, who has continued and strengthened the scientific and philosophical basis of our State. The well-known achievements of the Soviet Union in all branches of knowledge are due entirely to the attention which the Soviet Government has paid to the development of all forms of scholarship. The progress of science and culture was a deciding factor in the victories of our armies over fascist Germany and her satellites, who had the industrial might of all Europe behind them.

Russian scientists have a high opinion of the scientists of America and the great contribution they have made to world science. They respect the democratic principles of American society which Hitlerite reaction menaced in the same way as it menaced our own Soviet State principles—a higher form of democracy in so far as all State bodies are elected by the whole people in accordance with our democratic constitution. Together with American scientists we who are working in this field in Russia are building up a common, world-wide biology. We hope that this unfortunate misunderstanding of the basic ideas of our country, and of the path of development taken by Soviet science will be speedily dispelled, and that in the future the scientists of the two countries will progress together in an atmosphere of mutual understanding and comradeship.

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AMYLASE INHIBITOR OF NAVY BEANS

SIMPLE aqueous extracts of ground navy beans contain a heat-labile fraction which retards the activity of pancreatic amylase. The influence of such extracts upon the digestion of soluble starch becomes apparent with decreasing pH, causing progressive magnifi-

cation of the unfavorable influence of the increased hydrogen ion concentration itself. For example, 10 cc of a centrifuged one per cent. aqueous extract of ground navy beans may be observed to reduce the digestion of 100 mg of soluble starch at pH 4.7 to 16 per cent. of the uninhibited digestion at neutrality, while in the absence of the inhibitor, at pH 4.7, the corresponding value was found to be about 60 per cent. of the uninhibited digestion at neutrality.

Similar observations may be made with preparations derived from simple aqueous extracts by precipitating the active fraction with alcohol after removing most of the inert proteins by precipitation at pH 4.0. One milligram of such a preparation may decrease the digestibility of 100 mg of soluble starch at pH 5 to about 75 per cent. of that of the control at the same pH. Increasingly larger proportional amounts of the retarding fraction further increase this interference.

With the fraction employed, antiamylolytic activity is retained following repeated reprecipitation with alcohol but is markedly decreased by boiling or by treatment with kaolin. The preparations used showed antitryptic[1] as well as antiamylolytic activity and were, in fact, considerably more active with regard to the former.

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ON THE FORMATION OF ACETYLCHOLINE IN THE NERVE AXON

IN our recent paper published under this title in SCIENCE (Vol. 102, p. 250) an error occurred in the figures of the table. The correct figures for the amounts of acetylcholine formed per gram and hour in normal (n) and degenerated (d) sciatic nerve are: 48 hours after section of the sciatic in one experiment, 53.0 (n) and 51.0 (d); in a second 41.0 (n) and 33.0 (d); 72 hours after section in one experiment, 51.0 (n) and 29.0 (d), in another 52.0 (n) and 17.0 (d).

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SCIENTIFIC BOOKS

OPTICAL ENGINEERING

Fundamentals of Optical Engineering. By DONALD H. JACOBS. 487 pp. 343 illustrations. McGraw-Hill Book Company. 1943. $5.00.

THIS text was prepared for use in the training of technical personnel for optical development and manufacturing. The treatment is an elementary one throughout, and no attempt at mathematical derivation is made. The mathematical knowledge required is limited to elementary trigonometry and algebra. Problems and bibliography are included for each chapter, and there is a complete index; drawings and photographs are clear and well reproduced. Such a book was needed in this country, and Dr. Jacobs's text has undoubtedly proven useful; a fourth printing recently appeared. The literature on optical instruments and design is quite limited in this country—nothing comparable to Merté, Richter and von Rohr, Conrady or Twyman has been published on American practices. The principles and methods of lens design are not general subjects in engineering schools, and optical instruction has lagged behind that in other branches of modern technology.

The construction of an optical instrument involves lens design, mounting design and production techniques in both optical and mechanical shops. A useful text must therefore combine a theoretical with a practical approach; Dr. Jacobs treats the optical aspects quite thoroughly. Subject headings include: the fundamental properties of lenses, stops and prisms; the photometric properties of images; low-reflectance coats; optical glass and its defects. Within military security regulations he discusses the functioning of the optical and mechanical elements of military telescopes, periscopes, gunsights and range finders. There is also a description and classification of standard camera objectives, which includes some data on the useful field and speed of commercially available types. The section on mechanical design is less systematic. There is an elementary description of machine shop operations with notes on bearings, gears, electric motors and photoelectric cells. No description of the principles of the operation of optical grinding, generating or polishing machinery is included, although these are peculiar to the optical industry, and no modern book on standard techniques in this country is available. It is to be hoped that a future edition might be expanded to include optical working and testing processes for lenses and flats.

The sections on the properties of lenses and on the actual methods used in the design of optical systems are naturally the most valuable, as well as the most difficult for the student. The process of ray tracing is described fully, with check computation methods, although no formulae are given for sagittal or skew rays. Tracing rays is a laborious and time-consuming

[1] D. E. Bowman, *Proc. Soc. Exp. Biol. and Med.*, 57: 139, 1944.