

RECENT ADVANCES IN BIOCHEMISTRY*

THE present war has provided a powerful incentive to greater endeavour in certain fields of research, represented by physiology, general biochemistry, nutrition and medicine. Wider opportunities, greater variety of research material not ordinarily available, ungrudging and generous financial support and increasing State recognition and public appreciation of the indispensability of science for modern warfare, these factors have conspired to accelerate the progress of certain branches of science, which the world has been witnessing to-day. The fruits of these intensive labours carried out in laboratories of the belligerent Nations, are partially reflected in the Annual Reviews of Biochemistry. Much of the work must, for strategic reasons, await the return of peace while a substantial portion of the research published in the axis countries is not easily accessible.

In spite of these circumstances, the review for the year 1944 continues to portray a steady record of progress in the field of Biochemistry. Of the twenty-six topics discussed in the volume, no less than twenty-two are reviewed by American investigators, a significant circumstance which is indicative of the fact that to-day, the United States offers the most propitious and the most serene atmosphere for the prosecution of scientific research and for the promotion of scientific thought.

Biological oxidation and reduction has been reviewed by D. E. Green who has made substantial contributions to this field. The position of iron porphyrin enzyme complexes has been clarified and reference has been made to the possibly close relationship of flavoprotein systems with antibacterial agents. Two more coenzymes, different from any so far known, associated with lysine decarboxylase and aspartic transaminase systems, have been described. The physiological significance of acetyl phosphate discovered by Lipmann has been further elucidated. The author has discussed the citric acid cycle of Krebs in the light of recent work. The non-oxidative enzymes are reviewed by The Manns who have given a stimulating review of the eleven enzyme complexes of established integrity engaged in carbohydrate metabolism. Special attention should be drawn to the enzyme-like diffusing factors which are coming into prominence. The enzymes concerned with the utilisation, liberation and transport of CO₂, have received adequate attention.

The recent methods of the isolation and determination of amino acids in protein hydrolysates, are reviewed by Neurath and Greenstein. This includes the promising chromatographic and microbiological methods of separation and estimation as also the methods of isotopic analysis. A new and fruitful depart-

ture is the estimation of certain amino acids on intact protein without hydrolysing it. This procedure is obviously of fundamental value in elucidating the nature of the reactive groups determining its biochemical activity.

The chemistry and metabolism of the compounds of phosphorus is the topic of a detailed review by Green and Colowick. The field of carbohydrate, fat and protein metabolisms are as usual covered by three separate reviews. Indications that certain amino acids may eventually prove to be the precursors of certain vitamins in their biological syntheses are gradually unfolding themselves. The action of certain powerful drugs like sulphanilamides on biochemical reactions potentiated by enzymes and vitamins are discussed in the review on Water-Soluble Vitamins. Evidence regarding the existence of two more fat-soluble vitamins are presented in the review on Fat-Soluble Vitamins. One of them whose deficiency causes wrist stiffness and which is associated with raw cream has been obtained in a concentrated form.

The nutritional deficiencies in Farm Mammals is a subject of topical interest in view of the post-war restocking and breeding of herds which have been slaughtered or destroyed. It is of particular interest to India where the nutritional status of our stocks are depressingly poor, and where the "infant" mortality among our calves is appallingly high (50 per cent.). This topic forms the subject of an instructive review by Huffman and Duncan.

Biochemistry of fungi has been reviewed from a new and stimulating angle. "In the light of recent research showing that certain biochemical activities of the mold *Neurospora* are controlled by specific genes, it seems reasonable that similar genetic controls are responsible for many of the varied biochemical activities of fungi" The review represents a praiseworthy attempt at correlating recent developments in the biochemistry of fungi with this general concept.

David Glick who is a well-known figure in the field of micro- and ultramicro-chemistry, contributes a comprehensive and valuable review on histochemistry. Other reviews include those pertaining to Chloroplast Pigments, by H. H. Strain; Mineral Nutrition of Plants, by F. J. Richards; Growth-Regulating Substances in Plants, by J. Van Overbeek; Photoperiodism in Plants, by Karl C. Hamner; Synthetic Drugs—Antispasmodics, by F. F. Blicke; Alkaloids, by R. H. F. Manske; Chemistry of Hormones, by H. Jensen; Mineral Metabolism, by McCance and Widdowson; Biochemistry of Nucleic Acids, by Loring; and Steroids, by Koch.

The standard of the Review to which readers all the world over are accustomed has been maintained and Dr. Luck, the Founder-Editor, deserves the gratitude of all investigators in the field of Biochemistry to whom the Review continues to offer an unfailing source of stimulus and inspiration.

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