

die von R. MEIER (43 Seiten Literatur bei 34 Seiten Text) behandelt wird. Durch Klarheit und Vollständigkeit ausgezeichnet ist die schöne Übersicht über cancerogene Stoffe von N. P. BUU-HOI. Anschliessend berichten G. DOMAGK, L. JÜHLING und J. PÜTTER über Probleme der Chemotherapie bei Tumoren besonders mit Bayer E 39 und J. VONKENNEL und M. SCHOOG über die Chemotherapie der Hautkrankheiten. Nach kurzen Beiträgen über Zell-Elektrophorese von G. RUHENSTROTH-BAUER und P. SACHTLEBEN und über Vitamin B<sub>12</sub>-Analoga von W. FRIEDRICH und K. BERNHAUER schliesst das Buch mit einer recht interessanten Abhandlung von R. HAASE: "Strukturbildung in der Natur und der 2. Hauptsatz der Thermodynamik" und betont damit wohl bewusst die naturwissenschaftliche Grundeinstellung.

Die wissenschaftliche Qualität der einzelnen Beiträge ist durchweg gut. So gibt das Buch dem Leser die willkommene Möglichkeit, sich in kurzer und klarer Form von berufenen Sachkennern über die wichtigsten Fortschritte der Forschung unterrichten zu lassen. Ein solches Buch hat gefehlt, so dass man den Autoren, dem Herausgeber und dem Verlag für ihre Arbeit nur danken kann.

H. DRUCKREY

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**Ciba Foundation Symposium on Regulation of Cell Metabolism.** Edited by DR. G. E. W. WOLSTENHOLME. J. and A. Churchill Ltd., London, 1960. pp. 387, 52s. 6d.

THIS is an account of an enthralling Symposium planned and directed by Sir Hans Krebs with the cooperation of Professor Dickens as a result of a conversation between Professor Martius, Professor Lynen and Sir Hans Krebs. It is the result of papers by sixteen authors followed by an account of the discussion of these papers. Thirty-one persons attended and took part in this Symposium.

It commences with a Chairman's introductory address on the rate-limiting factors in cell respiration in which there is a consideration of how tissues such as cardiac muscle, showing great variations in the rate of respiration, all the changes from rest to activity, nevertheless can manage the consequential variations in a way in which factors other than hormonal may be involved. It deals with the reactions between oxygen and substrates involving such factors as iron porphyrins, flavoproteins and pyridine nucleotides. It points out the importance of feed-back systems in control. It is interesting that this mechanism has now become generally accepted in biochemistry, as it is one that was clearly enunciated by Sherrington in regard to reflex activity many years ago. The address by Krebs is followed by one by Siekevitz on the meaning of intracellular structure for metabolic regulation. He brings out well the various problems involved in the recent knowledge of the structure of mitochondria and of cytoplasm, in pointing out the modern views on the division of cytoplasm into numerous compartments. Clearly in matters of regulation the incidence of these barriers must be very thoroughly considered, and a similar aspect is discussed by De Duve.

E. C. Slater and W. C. Hülsmann deal with the respiratory chain and the relation to this of ADP. Aspects of control of oxygen utilisation are discussed by Britton Chance with a full account of his fascinating techniques for investigating reactions occurring in seconds, and his solution of many simultaneous equations.

A. Lehninger and colleagues discuss control points in phosphorylating respiration and the action of a mitochondrial respiration release factor. In this they delineated the effects of various uncoupling reagents. F. Dickens and colleagues have made a large contribution to the discussion, on various oxidative pathways of carbohydrate metabolism dealing, in addition to normal pathways, with the glucuronate pathway and the pentose phosphate pathway. Lipmann and colleague discuss glycogen synthesis in muscle. Martius deals with electron transport and is followed by a series of papers upon the control of glycolysis by Racker, Potter, Lynen and Holzer. It would be invidious to pick out special points of interest in this wide appreciation of the subject; that on triphosphopyridine nucleotide by Potter and Niemeyer, and the regulation of the Pasteur effect by phosphorylation reactions in relation to the exhaustion of the inorganic phosphate by Lynen seem very significant.

The Symposium finished with papers on the automatic adjustment mechanisms in bacterial cells by Dean and Hinshelwood, and control of growth of the bacterial cell by Magasanik *et al.*

The theme of the Symposium in its insistence upon looking at the reactions in the cell as a whole is admirable and provides much food for thought. In the past biochemists have been concentrating naturally upon the behaviour of isolated enzymes. The time has now come when a more forward attempt may be made to put these together and an oversight of these papers makes fairly clear what a

long way we shall have to go before we understand them in all their heterogeneity. The discussions which are also printed are informative and more valuable than the reviewer has often felt in the past. It is possible that these might still be edited more thoroughly with an improvement in the presentation.

Other biochemists could possibly have been included, but some limitation was necessary.

The book which is well produced represents a milestone in biochemical thought, and justifies the hope of Sir Hans that it will be regarded as a pioneer book. The reviewer was only surprised by one challenging sentence to the effect that hormones usually (though not always) act through direct effect on an enzyme. This would not be considered as proved by a majority of biochemists; but they should certainly make a point of reading this symposium.

RUDOLPH A. PETERS

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**Symposium on Protein Structure** Edited by A. NEUBERGER. Methuen & Co., Ltd., London, 1958. Price 45s.

THE meeting which gave rise to this volume, held in Paris, 1957, had as its original intention a discussion of the question of purity as it applies to proteins. In the event it covered most aspects of protein chemistry. The gradual enlargement of the scope of the symposium may explain the wide differences in character between the different contributions which range from extensive review articles through more usual symposium papers to detailed accounts of particular experiments. But it has also meant the inclusion of so many topics that all interested in this field will find something of value and interest.

It contains several methodological papers under the heading—general problems and methods—which include a stimulating paper on deuterium exchange by the late Professor Linderstrøm-Lang, and an excellent review by Tanford on protein configurations in solution. The section on specific proteins contains many contributions of great interest, in particular, the accounts of Hirs, Stein and Moore, and by Anfinsen, on the elucidation of such a large fraction of the structure of ribonuclease. Papers on recent developments concerning myoglobin, haemoglobin and tobacco mosaic virus include reviews of the advances in X-ray analysis of these proteins. The paper by Kendrew gives a clear picture of the methods which have since given his model of myoglobin. The rapid progress in the chemistry of the proteolytic enzymes is well covered.

Some miscellaneous observations on a diverse range of subjects comprise the last section. These include the sequence studies on lysozyme by the late Professor Fromageot and one extensive review by Professor Li of the species variation and structures of some of the pituitary hormones.

To one on the fringe of this subject this volume conveys clearly the great interest and pace of work in this field; to the specialist despite the great unevenness in the methods of presentation there is much of interest in this book.

K. A. STACEY

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**The Thyroid Gland** (N. B. MYANT Editor) British Medical Bulletin Vol. 16, No. 2, The British Council, London, May 1960, 20s.

THE articles are of the high standard set by previous issues of the Bulletin, and the choice of contributors is a guarantee of their authority. There is, naturally, a clinical orientation, the opening article being on Deafness and Thyroid Dysfunction (W. R. TROTTER); among the topics dealt with are diagnostic use of radio-iodine, auto-immunity, and interrelationships between the thyroid and the central nervous system. Scattered among such articles, in somewhat random order, are articles on more basic topics such as hormone biosynthesis (R. PITT-RIVERS). The latter article lacks formulae and a summary. Bioassay methods are nowhere considered, except in the excellent article by H. D. PURVES and D. D. ADAMS on thyroid-stimulating hormone; this article is marred only by a confusing opening sentence in the section on exophthalmos.

The absence of any articles on actions of thyroid hormone, at the tissue level, is a serious omission, particularly since there is an extensive and confusing literature on this question. It would, moreover, have been advantageous to give at the outset a "refresher" article, surveying established facts on the nature and actions of thyroid hormones (e.g. the role of thyroglobulin) and attempting to put the succeeding articles in perspective. The Bulletin is, then, not ideally suited to the hypothetical "general reader" mentioned in the Introduction.

E. REID