

which the reviewer has come into contact. The reason is doubtless that it is not easy to print regular rings except from special blocks, the expense of which would be considerable; the fact remains, however, that the American books are little, if any, more expensive, but possibly they have a larger circulation.

The general plan of the work remains as before, and it is suitable for the advanced student and research worker rather than the novice. The first hundred pages consist of a general section treating such topics as structure, isomerism, tautomerism, physical properties and nomenclature, all essential to the proper understanding of organic chemistry, but written for the most part in such a way as to be unsuitable for the beginner: a notable section describes the basic features of chromatography.

The following three parts deal about equally with aliphatic, carbocyclic and heterocyclic compounds in a systematic manner. This arrangement and its subdivisions will be well known, as there should be no one teaching or studying organic chemistry who is not familiar with the previous editions.

It is inevitable in a book of this kind that in order to cover the field in a reasonable space much of the matter should be compressed and simplified; it is perhaps a pity that in some instances such great brevity has been considered necessary, but to compensate for this, innumerable references are given which should make it very easy for any particular topic to be studied further.

The pages to which one naturally turns at present are those dealing with such substances as penicillin, paludrine, D.D.T., etc., the discovery and investigation of which have been among the few good things of the last bleak years: all such new compounds seem to be included with an adequate account of their history and properties. It is true the preparation of paludrine and the evidence for the structure of penicillin are not given, but it is probable, when the long delays in printing are considered, that neither had been published at the time the manuscript was prepared; no doubt they will be included in the next edition. Some few pages are devoted to nucleic acids.

Errors in the text are few and seem to be minor misprints; the index, of vital importance in a book of this sort, would appear to be adequate.

CARBOHYDRATE METABOLISM

Carbohydrate Metabolism

Correlation of Physiological, Biochemical and Clinical Aspects. By Prof. Samuel Soskin and Dr. Rachmiel Levine. Pp. viii+315. (Chicago: University of Chicago Press; London: Cambridge University Press, 1946.)

THIS interesting and instructive work on carbohydrate metabolism by Dr. Soskin and Dr. Levine, who have themselves contributed much of great value to the subject, is divided into five sections.

The first section deals briefly, but very clearly and adequately, with the many enzymic mechanisms involved in the chemical transformations which take place when carbohydrates break down in the living cell. The section concludes with chapters on the mode of liberation and transfer of the energy derived from carbohydrate metabolism and on the manner in which this energy is utilized for muscular

contraction. The main part played by adenosine triphosphate in the reactions of the cell is emphasized, and the significance of the work of Engelhardt and of Szent-Györgyi, on the importance, for muscular contraction, of the proteins myosin and actin, is pointed out.

The second section presents considerations concerning the nature and occurrence in the tissues of substances important in carbohydrate metabolism, and discusses the origin of blood sugar and the use of the diabetic organism for the experimental study of gluconeogenesis. The next section contains a critical survey of the classical criteria of diabetes, introducing the reader to the investigations of Minkowsky, and later workers, on the dextrose-nitrogen ratio, and deals with the subject of ketosis, showing how modern views of fatty acid breakdown supplant the older theories of ketogenesis and anti-ketogenesis. The complicated question of respiratory quotient is discussed, and this is followed by chapters on gluconeogenesis from protein and fat.

The fourth section presents the main course of the appetizing menu provided by Dr. Soskin and Dr. Levine. This portion of the book deals with the role of the endocrine glands in carbohydrate metabolism. The mechanism of action of insulin is fully discussed, and it is evident, as the authors say, "that while we are perhaps closer to the solution of insulin action than we are to the action of any other hormone, the problem is far from solved". The influence of the pancreas, the adrenal cortex, the thyroid and the anterior pituitary glands in the control of carbohydrate metabolism is described in some detail.

The final section has to do with what the authors term the integration of physiological and clinical aspects of carbohydrate breakdown. Dextrose tolerance curves in the normal and diabetic organisms are discussed and the effects of the various endocrine secretions in blood sugar regulation are outlined. This is followed by an account of the clinical disturbances, in the endocrine control of the blood sugar, that accompany disease or dysfunction of the glands or of the liver. The book ends with a note showing how present lines of investigation indicate that it is becoming impossible to subdivide the subject of metabolism into separate compartments, there being so many substances of simple chemical structure which are common to many phases of cell metabolism. The limitations and potentialities of present lines of work in advancing both endocrinology and pharmacology are pointed out.

The book is a clear and able exposition of many of the facts of, and the modern views bearing on, carbohydrate metabolism. It is a pity, perhaps, that a little more was not said on the subject of the association between certain forms of mental disturbances and carbohydrate breakdown—a subject of great interest to the psychiatrist who has witnessed the effects of insulin shock treatment in schizophrenia, or the effects of carbohydrate in improving prolonged narcosis treatment both in psychoses and neuroses. The importance, too, of glucose in securing, under physiological conditions, the synthesis of acetylcholine in the central nervous system might have been commented upon.

The work has most useful schematic representations which help to clarify the subject-matter, and more than a thousand references. It is an excellent book which should be read by all interested in recent work on the metabolism of carbohydrates in the animal body.

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