A helpful feature is the explanation of the generally accepted International Union of Chemistry (I.U.C.) system of nomenclature. In the chapter on "Heterocyclic Compounds," attention should have been called to the ring index, a *vade mecum* which is indispensable to all students and investigators in this branch of organic chemistry.

Liberally illustrated with structural formulas and provided with tabular summaries of important series and their properties, nearly every chapter concludes with a list of test questions. Considerable attention is given throughout the book to the use of organic compounds in medicine, and the final chapter gives a compact up-to-date review of polymerization, synthetic rubbers and plastics.

The subject-matter is well classified and arranged, lucidly and logically presented, covering the subject admirably within its space limitations, so that the book should prove a very useful and interesting first-year college text and as a foundation for more advanced and more highly specialized courses.

In paper, type, printing and binding in vermin-proof and water-resisting material, the book is up to the usual high standard of all recent Blakiston publications.

MARSTON TAYLOR BOGERT

BIOLOGICAL SYMPOSIA

Sex Hormones. Edited by F. C. KOCH and PHILIP E. SMITH. 146 pp. The Jaques Cattell Press. 1942. $2.50.

THE ninth volume of "Biological Symposia" is a presentation of eight papers delivered in a symposium on "The Comparative Biology and Metabolism of the Testicular and Ovarian Hormones," presented as part of the fiftieth anniversary celebration of the University of Chicago in September, 1941. The book has two sections: I. Sex hormones—their actions and metabolism; II. Hormonal factors in the inversion of sex.

A broad and thoughtful introductory chapter by Professor Carl Moore is followed in Section I by three more meaty disquisitions by Dr. A. T. Kenyon, Professor E. A. Doisy and Professor F. C. Koch. They discuss, respectively, the metabolic influences of gonadal hormones, the metabolism of estrogens and the metabolism of androgens.

Dr. Kenyon's is an informative account in biochemical terms of the purely somatic effects of the sex hormones. It is in essence a description of the pioneering in a field that is bound to expand and develop. His data are derived chiefly from observations on human subjects and thus give point to the need for well-controlled experiments with animals.

Professor Doisy's paper is by contrast an essay in comparative biochemistry. In a balanced survey of the chemical changes undergone by estrogens in the animal body, Professor Doisy brings order to a subject hitherto confused by purely technical difficulties. The informed reader will find this chapter a welcome corollary to Doisy's previous writings in this field.

Professor Koch's lucid chapter is an admirable synthesis of biochemical theory and clinical findings. Proceeding from the studies of androgen and steroid excretion in human subjects, normal and abnormal, to the little-known but highly interesting data on the bacterial metabolism of steroids, Professor Koch develops an excellent general picture particularly of the catabolic fate of androgenic substance. His critical account of modern theories concerned with the origins of androgenic hormones is especially clear and interesting.

In the second section of the book are papers on experimental sex inversion in the plumage of birds (by Professor C. H. Danforth), in Amphibia (by Professor R. R. Humphrey), in the rat embryo (by Dr. R. R. Greene) and in the opossum (by Professor R. K. Burns, Jr.). These papers are concerned in varying degree and detail with the bipotentiality of various somatic responses to endogenous or exogenous androgen and estrogen, particularly in embryonic life. The much more surprising effects of the sex hormones upon differentiation of the embryonic gonads are carefully detailed, from the almost complete sex reversal in certain amphibia to the sterilization in mammalian embryos. The reviewer is struck by the contrast between the biochemical analysis of the first section and the morphogenetic detail of this section. In the study of sex inversion a large biochemical gap needs bridging. The dichotomy of response of gonad cortex and medulla, Mullerian and Wolffian duct, to various steroid hormones has had a real embryological demonstration. A biochemical basis for such dichotomy is woefully lacking.

These factual summary presentations illustrate in part the dramatic development of our knowledge of steroid hormone function. I doubt that Professor Doisy realized in 1929 the consequences of his chemical isolation of theelin. His few crystals initiated the deluge of steroid hormones—androgens, progestins, estrogens, cortins. Their biological activities extend from conception to senescence. Their roles in a host of physiological processes are slowly becoming clear. This book has the special merit of shaping that clarity from a large and formless literature.

GREGORY PINCUS

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VITAMINS

The Biological Action of the Vitamins. Edited by E. A. EVANS, JR.

THIS book, which takes one close to the heart of the problem, is composed of fourteen invitation papers, presented at the fiftieth anniversary celebration of the