spectroscopic information on specific compounds and not find an entry even though the compound may be discussed in the text. While there are copious references to the original literature, it is noteworthy that fewer than 9 per cent of the citations refer to the post-1959 period, and almost the entire number of these to 1960 and 1961. There are a number of blemishes in the production, carelessly printed formulae and minor typographical errors, which are more irritating than confusing. In some sections the author's arguments would have been more clear if he had been more concise and if the tables had been more compact and placed closer to the relevant discussion. Some of the structures are accompanied by wave-lengths but not by intensities, which have to be sought for in the text or in the tables. In some cases intensities are not quoted at all, for example, for three of the four bands of acridine, and for riboflavin. A more serious comment is that some of the numerical values quoted do not agree well with values that are given in the literature.

Prof. Scott is to be congratulated on having gathered together so much information and imposed an order on it. Undoubtedly all natural product chemists and many others as well will want to have ready access to this book.

C. J. TIMMONS

A COURSE IN ENDOCRINOLOGY

Experimental Endocrinology

A Sourcebook of Basic Techniques. By M. X. Zarrow, J. M. Yochim and J. L. McCarthy. With a chapter on Invertebrate Hormones by R. C. Sanborn. Pp. xvi + 519. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1964.) 107s. 6d.

IN the curriculum of some North American universities endocrinology receives special consideration, but in Britain it is taught largely in the context of other main subjects such as zoology, physiology and medicine, and formal instruction for the advanced student is uncommon. A course in endocrinology that was first taught in the laboratory of Prof. F. L. Hisaw in 1946 forms the basis of a new book, *Experimental Endocrinology. A Sourcebook of Basic Techniques*. The scope of this book is clearly stated in the preface by Prof. Zarrow: to provide material for "an advanced course or for use by the individual student in a project course". More than a hundred experiments are described, ranging from the classical methods of the 1930's to those developed more recently (up to about 1962), emphasizing the widespread derivation of techniques from disciplines that include anatomy and physiology, biochemistry and pharmacology. It is both text-book and laboratory manual, and the authors claim that about 85 per cent of the experiments they describe have worked successfully "at the student level".

An earlier definition of a hormone as "a specific chemical entity that is secreted into the blood by a well-defined group of cells and is transported via the vascular system to a site distant from its point of origin, where its action takes place", is considered to be no longer adequate. It is now expressed in more flexible terms to include those "physiological organic substances" secreted from a "relatively restricted area of the organism" that diffuse or are transported to sites of action where their effect is one of adjustment or integration. Although this raises problems with respect to certain substances, it goes some way to describe others such as the posterior pituitary hormones vasopressin and oxytocin.

Classified according to their chemical structure, the hormones are divided into three main groups: first, steroids related to cholesterol, such as oestrogens and adrenocorticoids; secondly, amino-acids or their deriva-

tives, including catechol amines and the thyroid hormones; and thirdly, polypeptides and proteins such as relaxin and insulin, corticotrophin and parathormone. The main members of these groups are considered in thirteen chapters in which about one-half of the text is devoted to the source and nature of the hormone, its biological effects and mode of action, and its biosynthesis and metabolism. This is followed by a separate section dealing with the basis of suitable assays, biological and chemical. In chapters on oestrogens, androgens, thyroid hormones, and, to a lesser extent, gonadotrophins, the question of anti-hormones is considered. The text covers numerous aspects: physical properties of somatotrophin and parathormone, amino-acid sequences of polypeptide and protein hormones, the secretion of catechol amines, the action of pancreatic hormones in metabolic pathways, the interrelationships of gonadotrophins in the female mammal, and many others. In the final chapter on invertebrate hormones, R. C. Sanborn discusses the regulation of moulting, growth and reproduction in the Insecta and the Crustacea as well as activity rhythms and pheromones, to give a few examples.

Important contributions have been made by experiments that involve ablation of endocrine glands, replacement therapy and the isolation and estimation of hormones. In the second half of every chapter the authors illustrate the use of these techniques in experimental endocrinology. There is a valuable series of experiments that includes ablation of glands, described with usually helpful diagrams (hypophysectomy in rat and chicken, parathyroidectomy in pigeon, adrenalectomy in rat), techniques of transplantation and parabiosis, biological assays and experiments using replacement therapy, and chemical procedures for the extraction and estimation of hormones involving chromatography, fluorimetry, spectrophotometry and radioisotope methods. The series is not exhaustive, and inconsistencies occur—for example, the absence of a chemical determination for progesterone when more complex methods are introduced in other sections—but many laboratories will find here much useful information if it is understood that the book is intended primarily for course-work and not as a definitive account of experiments in endocrinology.

The text is usually concise, comprehensive and well-documented, the authors presenting much of their material in tabular form which, although readily assimilable, tends to repeat information already given in the text. Similarly, there is a repetition of biosynthetic pathways in some chapters on steroids that could have been avoided by a composite and more informative diagram as used to describe the metabolism of adrenocorticoids. Several inconsistencies were noted, especially in the presentation of references to original sources, and for a book of this price, in which the print and lay-out are generally good, it is to be regretted that the illustrations frequently lack clarity and contrast.

It is hoped that the authors will be stimulated to produce future editions of this book as further techniques, suitable for teaching courses, become available.

R. B. HEAP

REVIEW OF CATALYSIS

Advances in Catalysis and Related Subjects

Vol. 14. Edited by D. D. Eley, Herman Pines and Paul B. Weisz. Pp. xii + 522. (New York and London: Academic Press, 1963.) 114s. 6d.

VOLUME 14 of *Advances in Catalysis and Related Subjects* presents again the now familiar but still admirable annual medley of review articles on adsorption and catalysis, together with a welcome intrusion from a cognate region of biochemistry.

In two very helpful accounts of techniques, it is gratifying to find proper credit given to early workers: much recent writing seems to imply that the present-day solutions emerged fully-fledged within the past decade. Leftin and Hobson in "Application of Spectrophotometry to the Study of Catalyst Systems" (83 pp. and references 4 pp.) deal with optical absorption spectroscopy, applied to the investigation of some chemisorbed complexes on metals, oxides and salts; coverage is complete but acid catalysts, especially silica-aluminas, receive most attention as befits the interests of these authors and the pattern of previous reviews. Erlich's "Modern Methods in Surface Kinetics" (168 pp. and references 4 pp.) provides, in characteristic style, a thorough survey of flash desorption, field emission microscopy and ultrahigh vacuum technique (both methods and typical results) with a timely section on practical details. Evidently these powerful tools, together with low-energy electron-diffraction, will soon be commonplace in research on clean metal surfaces. But when will the bridge between surface physics and surface chemistry be consolidated?

There are three contributions to the mainstream of catalysis, each in different vein. Mars, Scholten and Zwietering, in "The Catalytic Decomposition of Formic Acid" (75 pp. and references 4 pp.), survey present research and points of view concerning this model-reaction, about which discussion has sometimes reached polemic-force; dehydrogenation and dehydration over metals and oxides are discussed in detail and related to the water-gas shift reaction and the decomposition of bulk formates. The system is well suited to tests of the intermediate compound theory of catalysis, but the authors are rightly guarded in their appraisal of recent generalizations. Catalysis in preparative organic chemistry is represented by the valuable, descriptive paper entitled "Hydrogenation of Pyridines and Quinolines" (45 pp. and references 5 pp.) by Freifelder, which collects results obtained on the selective hydrogenation of these awkward, self-poisoning heterocycles: one feels here the lack of a short section on mechanism designed to crystallize the topic. Margolis covers a wide and important field somewhat discursively in the chapter entitled "Catalytic Oxidation of Hydrocarbons" (68 pp. and references 5 pp.). The trend of Russian research emerges strongly, but strange phraseology obscures some passages, and vital points, such as the evidence for various forms of chemisorbed oxygen, are treated too lightly. There is a nice counterpoint between electron-transfer and chemical complex theories, but one is left wondering whether sensitive surface-potential methods are central to the investigation of polyfunctional surfaces.

Calvin approaches the fundamental biochemical photocatalytic problem, in "Quantum Conversion in Chemoplasts" (31 pp. and references 3 pp.), with the aid of photoconductive organic systems suggested by present organic semiconductor research, and draws some interesting parallels: it is exciting to see how the gap between the quick and the dead narrows.

In all, a well-composed medley—but surely the editor cannot still maintain that such diverse catalytic chemistry comprises a discipline "in its own right".

D. A. DOWDEN

POPULAR PRESENTATION OF MEDICAL RESEARCH

Our Most Interesting Diseases

By Harold Burn. Pp. 180. (London: George Allen and Unwin Ltd., 1964.) 25s.

TO give to the lay public a description of the growing points of medical research to-day is an important and urgent task. The difficulty that the writer has to overcome

is one of communication: it is essential to exercise economy in the use of technical terms and to explain adequately and in simple language those that are used. Once again Prof. H. Burn has set himself this task and once again he has been successful. This book deserves to find many readers.

The topics that Prof. Burn has selected are all of great importance to those who live in a modern society. It is interesting that in his catalogue of our most interesting diseases the microbial infections are not listed. That they are omitted is a development that we owe to relatively recent successes in chemotherapy. The diseases that this book deals with are mainly those of late or middle age. Cancer, vascular and heart disease, gastric and duodenal ulcer, bronchitis—these are topics that we find discussed.

In a book of this kind the reader cannot expect to find final or authoritative answers. The description of modern research is a tale of trial and error. The author's individual attitude must determine also how he selects and weighs the material discussed. What matters is that what is selected is adequately described, and that in each chapter the story has cohesion and adds up to give a clear picture of the present state of our knowledge. There are a number of instances where the reader would like to know if all the experts are in agreement with Prof. Burn's evaluation of the evidence; but it is one of the great merits of this book that we are given the evidence and that we are allowed to arrive at our own conclusions.

Prof. Burn does not see medical science as a body of knowledge that is unrelated to our lives. The influence of environment, of social conditions and habits on disease and health is discussed. Almost inevitably this leads in the final chapter of the book to a guide for healthier living. We are told to eat less, to drink less and to smoke less and not to give up physical exercise. These precepts are given with moderation and common sense; and this gives the author's injunctions both authority and authenticity.

H. BLASCHKO

THEORY AND PRACTICE OF BIOLOGICAL CONTROL

Biological Control of Insect Pests and Weeds

Edited by Paul DeBach. Pp. xxiv + 844. (London: Chapman and Hall, Ltd., 1964.) 120s.

C. P. CLAUSEN once remarked that insects are their own worst enemies. Their other enemies include pathogenic micro-organisms, while their other victims include plants. These ideas are well illustrated by numerous successes in the biological control of pests and weeds described in this book. Many of the successes have been in California. This is attributable partly to local ecological features, but also in great measure to a number of enthusiastic exponents of the method, notably to the leadership of the late Prof. Harry S. Smith, to whom the book is dedicated. Its 16 authors are all present or past staff members of the University of California, all specialists on the topics with which they deal, some of them pre-eminent authorities. The outcome is a most impressive and comprehensive treatise, in which the advantages of multiple authorship have been fully exploited; thanks to careful planning and editing, the disadvantages have, on the whole, been overcome. The subject is clearly and logically subdivided in a scheme fully set out in a contents list of 15 pages.

In the first of the eight sections, P. DeBach deals with the scope of biological control and R. L. Doutt with its historical development. In Section 2, the first 72 pages are devoted to an outline of the development of population ecology, and to a discussion of ideas of natural control