Book Reviews

The Diseases of Occupations. Donald Hunter. Little, Brown, Boston, 1955. vii + 1046 pp. Illus. $20.

Occupational medicine is the division of the health sciences that seeks to bridge two great technologies: modern industry and modern clinical medicine. Within this broad domain there is room for authoritative textbooks that cover different segments or present different approaches to specific segments of the whole. The present book deals with the disease processes known to be caused by factors of occupation, and does so in an interesting fashion.

An especially delightful feature of the book is a generous presentation of nonclinical information, which serves as the background and general framework for the description of occupational diseases. The story of the industrialization of society and of the full meaning of this for the English worker is accomplished with enviable brevity and clarity. A rather large proportion of the total text is given over to descriptions of the industrial processes at which harmful exposures may occur. These are in terms that are useful to the clinician, and they suggest wide, firsthand acquaintance with these matters on the part of the author.

Those who are especially experienced in one or another occupational disease may find some fault in the location of emphasis, in certain omissions, and in a failure here and there to recognize the clinical variations of dynamic disease processes. In this country, where the present compulsion is to define safe exposures in terms of dose as the product of time and concentration to the end that precise engineering specifications may be developed for the elimination of hazards, there may be some grumbling that numbers are loosely handled. In short, this is not a technical handbook. Rather, it is a full and exciting presentation of a branch of medicine that has until recently been grossly neglected and must be developed more fully if we are to live successfully with an ever-increasing industrialization.

The book provides a much needed framework for both the teacher and the student of occupational medicine. The practitioner who occasionally wonders about the relationships between employment and the clinical problem at hand will find here a positive stimulus to consider occupational diseases, but he will not always find help in distinguishing these from nonoccupational conditions. For the specialist in occupational medicine, the book will provide a rich filling-out of his personal experience and will prove to be a difficult volume to put aside once it is opened.

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The Genus Nicotiana. Origins, relationships, and evolution of its species in the light of their distribution, morphology, and cytogenetics. Thomas Harper Goodspeed. Chronica Botanica, Waltham, Mass.; Stechert-Hafner, New York, 1954. xxii + 356 pp. Illus. + plates. $12.50.

Thomas Goodspeed's studies of *Nicotiana* began soon after a research program on the genus was initiated at the University of California in 1904. His investigations during the past 30 years have been directed toward an accumulation and analysis of evidence on the origins, evolution, and relationships of the modern species of the genus. A feature of the studies has been the maintenance of a living collection of almost all the *Nicotiana* species and the production of a large number of different interspecific hybrids. Both species and hybrids have been studied comprehensively from chromosomes to trichomes.

In the first chapter of Goodspeed's book the objective and argument are presented. Then follow 11 chapters that document in detail the evidence from geographic distribution, morphology, cytology of the species, and cytology of F_1 interspecific hybrids in terms of the nature and significance of chromosome-pairing relationships at meiosis.

The main theoretical concepts on *Nicotiana* evolution, past and present, are set forth in Chapters 13 and 14 under the collective heading "Phylesis." The author's views on the evolutionary background of the genus and the cytological mechanisms involved in the formation of 12- and 24-paired modern species are plausible and convincing, respectively. Speculations on the future of the genus are conservative, ending on the optimistic note that "the genus may be expected to expand both genetically and geographically, with greatest increase in number of species on the higher polyploid level."

The final part of the book is a 170-page taxonomic monograph of the genus, which was prepared in collaboration with Helen-Mar Wheeler and Paul C. Hutchison, senior botanists at the University of California Botanical Garden. This new and complete systematic treatment will be invaluable to those working with the genus, for in the past there has been much confusion owing to synonymy, names from insufficiently known specimens, and so forth.

Diagrammatic representations of the evolution of *Nicotiana* species in terms of three arcs culminating, at the third level, in the current 14 sections and 60 species are highly effective. By repetition there is perhaps a tendency to overemphasize the hypothesis that the genus arose from a pregeneric reservoir consisting of 6-paired pre-*Cestrum,* pre-*Nicotiana* and pre-*Petunia* elements. For a broader genetic exposition of the relationships among species, the author could have included to advantage discussion of such significant subjects as duplicate genes and genetic analysis of generations succeeding the F_1 of interspecific hybrids. A more detailed treatment of the cultivated species, *N. tabacum,* would, in my opinion, have further increased the general usefulness of the book for reference.

The Genus Nicotiana is a much needed and welcome compilation of a wealth of world literature and a lifetime of research. It will take its place among such classics as Babcock's *The Genus Crepis* and *The Evolution of Gossypium* by Hutchinson, Silow, and Stephens. Finally, admirable publishing skill is exhibited in the numerous excellent illustrations and pleasing format of the book.

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The Interpretation of Dreams. Sigmund Freud. Translated by James Strachey. Basic Books, New York, 1955. xxxii + 692 pp. $7.50. ,

This edition is a reprint of volumes IV and V, the first to appear (in 1953) of the Standard Edition of the Complete Psychological Works of Sigmund Freud now being published under the auspices of the British Institute of Psychoanalysis.

The Interpretation of Dreams was regarded by Freud as his most important

work; of it he wrote, "Insight such as this falls to one's lot but once in a lifetime." It and the *Three Essays on the Theory of Sexuality* were the only two books that he revised as new editions were published. Chapter VII on "The psychology of the dream processes" is the basis for his metapsychology, knowledge of which is essential to any understanding of the theoretical aspects of his work.

This volume is not an easy one to read. It is based on the eighth (1930) edition, the last published in Freud's lifetime. It is in effect, however, a variorum edition; it lists the alterations introduced since the first issue, and consequently contains numerous explanatory notes. In an effort to convey more precisely the exact meaning of the original text, the translations of some of the dreams are awkward, but this is necessary if one is to understand the import of the interpretations that follow. Despite this stiffness and the interruptions in reading caused by the numerous annotations, the serious student will find this a rewarding book. A cursory comparison of Chapter VII in this volume with that in Brill's translation, which appeared in 1931, reveals how much more Strachey has made available to us. Together with the wealth of material in the recently published correspondence with Wilhelm Fliess, this volume gives us an understanding of Freud's first neurophysiological theory of the working of the mind and its subsequent replacement with a psychological system that followed the same general pattern.

There is an excellent general index, an index of the dreams referred to in the text, a bibliography of all works mentioned in the text, and another of important works on dreams (not referred to by Freud) published before 1900.

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Harmonic Analysis and the Theory of Probability. Salomon Bochner. University of California Press, Berkeley, 1955. viii + 176 pp. $4.50.

Except for expressions of thanks and credit, the entire preface of this book reads as follows: "This is a tract on some topics in Fourier analysis of finitely and infinitely many variables and on some topics in the theory of probability and the connection between the two is a very intimate one on the whole." To explain a little more fully, some topics in Fourier analysis are treated that have no special reference to the theory of probability—generalized theta relations and zeta functions are especially noteworthy examples. But almost all the topics in the theory of probability are applications of Fourier analysis. The connection between the two fields is the familiar one arising out of the Fourier transformation of distributions of real-valued and vector-valued random variables.

Many of the topics presented are original with Bochner and either appear here for the first time or are taken from his journal publications; and the treatment of all of them is marked by his originality. Indeed, the tract can fairly be described as a review and extension of a certain part of the author's work in Fourier analysis.

The tract is addressed to professional mathematicians and is, accordingly, too technical to be accessible to other scientists, with few exceptions. It is well, but compactly, written. The workmanship demonstrates and communicates great power and knowledge, so the tract abundantly repays the intensive study required to read it with understanding.

There are many typographic errors and a few errors that are a little more substantial. Their cumulative effect is some impediment.

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Neurochemistry. The chemical dynamics of brain and nerve. K. A. C. Elliott, Irvine H. Page, and J. H. Quastel, Eds. Thomas, Springfield, Ill., 1955. xii + 900 pp. Illus. $19.50.

In the past, brain was often considered as a morphological and functional unit by physiologists and pathologists. The integration of biochemical research, however, with research on brain structure and function is a recent development, which, for its very obvious advantages, cannot be welcomed enough. Several books and meetings during the last few years are stimulating proof that neurochemistry has come of age as an independent field of research. One of the very good and most ambitious of these books is *Neurochemistry, the Chemical Dynamics of Brain and Nerve.* Reviews in a fast-developing field are not an easy task, but this book fulfills its task admirably. Such a book is doubly important, since the information in this field is scattered in biochemical, physiological, pharmacological, neurological, histological, and psychiatric journals, to mention a few.

The two shortcomings of this book are fully realized by the editors. Because the publication took 4 years, and despite the fact that many chapters are revised, many recent advances are left out. The other shortcoming, probably a necessary fault of most such books, is, to quote the editors, that "a book of this kind can never be fully comprehensive." I and probably a great many other people in the field would welcome a second volume of the book in which subjects would be discussed that, for reasons of keeping down the cost or size, were treated very concisely or omitted. For example, the *in vivo* metabolism of the brain, hallucinogens, the new tranquilizers, serotonin and so forth, are not discussed at all; chapters on lipids, the blood brain barrier, the metabolism of proteins and amino acids, and phosphorus metabolism are rather sketchy.

The 32 chapters of the book cannot all be mentioned here. The central importance of carbohydrate metabolism is well treated in several chapters. K. A. C. Elliott writes on tissue respiration, H. Weil-Malherbe on oxidation mechanisms, R. A. Peters on pyruvate metabolism, and E. Racker on glycolysis. The acetylcholine and cholinesterase systems are reviewed by J. H. Quastel, D. Nachmansohn, A. S. V. Burgen, and F. C. MacIntosh in their respective chapters, in which there is very little duplication of the different approaches to the problem. Glutamic acid and glutamine are clearly reviewed by H. Waelsch, and, in a short article, nucleic acids and proteins are discussed by H. Hyden.

The chemical constituents of brain and the biochemistry of demyelination are discussed by R. J. Rossiter. S. S. Kety discusses blood flow, W. M. Sperry the biochemistry of early development, and J. H. Holmes and D. B. Tower intracranial fluids. Other chapters deal with noradrenaline, steroid hormones, electrolytes, neurotropic drugs, convulsive conditions, and nutritional disorders. Mention should be made of the very interesting reviews of J. H. Quastel on narcosis and of L. S. Penrose on inborn errors of metabolism.

Books of this scope have dual function. They not only review the work that has been done in the field but also, by pointing out the work that has not yet been done, stimulate further research. *Neurochemistry* fulfills this dual role remarkably well.

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Instruments for Measurement and Control. Werner G. Holzbock. Reinhold, New York; Chapman & Hall, London, 1955. 371 pp. Illus. $10.

This is a descriptive book for plant technicians and practicing engineers. Written by a development engineer of the Askania Regulator Company, it attempts "to acquaint the reader with the types of instruments available for the measure-