all the important work current at the time of writing. These chapters particularly will be an extremely valuable reference source to all workers in the field of radiation biology.

This volume is a definitive addition to the libraries of radiobiologists, radiologists, radiological physicists, and a large group of other scientists whose work brings them in contact with the effects of ionizing radiations on living tissues.

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The Horse-Flies (Diptera: Tabanidae) of the Ethiopian Region. vol. II: *Tabanus and Related Genera.* H. Oldroyd. British Museum (Natural History), London, 1954. x + 341 pp. Illus. + plates. £2 5s.

Here is a handsomely printed and abundantly illustrated companion volume to the first of the series on another tribe, the Haematopotini, of the same region. The third, to appear later on the entire subfamily Pangoniinae, will complete the series. This outstanding monographic work by a world authority on an important blood-sucking group of insects constitutes a monumental contribution to an understanding of insects of medical and veterinary importance in Africa. It will be the chief reference in its field for many years. The British Museum (Natural History) is to be congratulated for sponsoring this more than ample treatment at a time when printing costs are up and publication of large systematic, faunal studies, even of an important group like this, are more often discouraged than stimulated.

The author brings to bear a wealth of world experience with this family of flies, and integrates the latest refinements in classification with those on other continents. Not since the very inadequate and incomplete work of Surcouf and Ricardo in 1909 has there been available any comprehensive treatment of the complex group of flies related to the genus *Tabanus sens. lat.* for the region. The keys in particular will be welcomed and they appear to be highly practical, supplemented by 238 critical figures of which the author himself has drawn many. There are 31 maps showing distribution of species groups for a total of 147 species, 17 new. For the great majority of these, Oldroyd has studied the types and redescribed fresh specimens, including the males of about half. This was facilitated by the wealth of material uniquely accessible to him in the British Museum and in other collections. It is remarkable that only 8 species of *Tabanus* are deleted from the Ethiopian list as wrongly or doubtfully located, or unrecognizable.

The author discusses previous efforts and difficulties in attempting to break up the "great, unorganized mass of species" in the "all-embracing *Tabanus*" and accomplishes some restriction himself, but further admits that "it is certain that very many of the species included [in his *Tabanus sens. str.*] are not strictly congeneric with *Tabanus bovinus,* and therefore there is little one can say about the group in a positive sense." Three new genera are proposed and four, based on new conceptions and in part on recognition of primitive elements through the bare basicostas on the wings, are raised from previous subgeneric status.

Though the basic purpose of the book is a systematic review, there are introductory discussions of such subjects as morphology, collecting and preserving, early stages and habits, transmission of disease, and phylogeny which make interesting and informative reading for many not particularly interested in taxonomy *per se.* One stated aim in this regard is most admirable: "I have brought together everything I could find in the hope of stimulating more study of the behavior of the living flies, and more collecting and breeding of the larvae and pupae." This volume should certainly stimulate progress in that direction, particularly since a new world of previously supposed rare or unknown tabanids has been opened up incidental to the study of mosquito denizens high up in the jungle canopy.

The considerable upsurge in world-wide interest in the Tabanidae is reflected in the author's references including unpublished studies of Ovazza and Taufflieb on possible discovery of new characters of internal female genitalia. A marked advance in world classification of suprageneric categories is anticipated in the studies of Mackerras of Australia (also in press) on genitalia of both sexes which should integrate nicely with the third Ethiopian volume still to come.

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Ferromagnetic Domains. K. H. Stewart. Cambridge Univ Press, New York, 1954. viii + 176 pp. Illus. + plates. $4.75.

A review or monograph inevitably reflects the principal interests of its author. The recent Cambridge monograph, *Ferromagnetic Domains,* is no exception. The author has given an admirable treatment of the phases of the subject with which he has had most intimate association in his research activities. A consequence of this is that the value of this work is to be found not so much in the early chapters devoted to the nature, background, and origin of the domain concept in ferromagnetism and their properties but rather in the treatment of the outward manifestations of their existence in influencing macroscopically measurable material properties. Thus the chapters on time effects in ferromagnetic materials and on hindrances to domain wall motion are a welcome addition to the literature in that they provide a coherent though succinct survey of developments in this direction. By contrast, the early chapters on magnetostriction and domain arrangements leave much to be desired in simplicity and coherence of presentation and as a potential source for the liberal education of the novice in the fundamentals of domain theory.

The attempt to oversimplify the picture, which is so often necessary in this type of work, makes for a handful of lapses in rigor, such as the erroneous contention that cubic iron readily slips along planes as a means of explaining the symmetry observed in the early Bitter patterns. On the whole, this book can hardly be recommended as a primer in domain theory but will undoubtedly prove a fine reference to workers in the field as an exposition of an important and active phase of magnetic effects arising from domain phenomena which is, in fact, the avowed purpose of the monograph series of which this book is a part.

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The Kinetic Basis of Molecular Biology. Frank H. Johnson, Henry Eyring, and Milton J. Polissar. Wiley, New York; Chapman & Hall, London, 1954. vii + 874 pp. Illus. $15.

Theories and techniques of modern physical chemistry are just beginning to assume an important place in the investigation of biological systems. This book is the most advanced and most useful presentation of the applications of physical chemistry to biology that has appeared. It is a valuable guide for all whose research approaches problems of living systems at the molecular level, particularly problems of a dynamic nature for the book emphasizes the application of classical and modern chemical-kinetics. It provides a source of prototype mechanisms, an extensive collection of reference material, and, most important of all, a solid introduction to the philosophy of present-day physical chemistry presented by men familiar with both the power of that subject and the complications encountered in biological systems.

The book breaks down into three parts. The first surveys rapidly, and probably inadequately for many natural scientists, the theories of modern physics and chemistry. Only Chapter 1, in which the theory of absolute reaction rates is derived, is essential for reading the remainder. The middle section is based on the well-known work of Johnson and Eyring and their collaborators on bioluminescence, but is extended to cover a wide variety of other problems more or less closely related to problems which have appeared in bioluminescence.

The third section examines permeation and diffusion phenomena in living systems, including extensive discussions of muscular contraction and nervous function. While there is less original material in this section, modern theories of the phenomena are presented on a more comprehensive and more satisfactory theoretical framework than has previously appeared. In particular, the discussions of active ion transport are the best thus far.

The book is uneven, somewhat special, and not comprehensive. Specialists reading discussions of subjects in their own fields will occasionally be dissatisfied, if not antagonistic, to detailed interpretations for little attempt has been made to examine alternative theories and frequently it seems that subjects have been "shoehorned" into a preconceived and inapplicable framework. Such objections are probably not particularly important. Although the authors have stated as their purpose the interpretation of a representative collection of biological phenomena, their major success lies not in this direction but in the procedures of thought and technique for the use of physical chemistry, implicit throughout the book. Especially important in this direction are the frequent uses of idealized systems that emphasize only the most essential molecules and characteristics of complicated systems, a technique exemplified in the authors' treatment of nerve processes. Undoubtedly many of the specific interpretations will not stand the test of time. The general methodology, on the other hand, is well tested and here to stay. The natural scientist will find this a useful handbook of application and a stimulating source of new ideas.

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Acoustics. Leo L. Beranek. McGraw-Hill, New York–London, 1954. x + 481 pp. Illus. $9.

Those who learned their acoustics from textbooks dated before about 1915 will gasp when they compare this up-to-date textbook with those of yesteryear. They will look in vain for the familiar chapters on the theory of vibrating strings, rods, bars, plates, and pipes, but they will find that acoustics has acquired a "new look" and many new sounds during these past four decades. Modern acoustics, in many respects, began in 1915 with the advent of electronics and the high-quality microphone. Beranek's book begins where the classical books ended. It is primarily a treatise of modern acoustics, a thoroughly teachable and practical book that can be commended to both professional and amateur acousticians. The acoustial engineer, and even many of those who retain him, will find ready solutions to many problems concerned with noise and electroacoustical devices.

Chapter 1 gives a brief introduction to modern acoustics and summarizes relevant American Standards acoustical definitions and terminology. Chapter 2 presents solutions of the wave equation in two parallel columns; the one-dimensional derivation in the first column and a juxtaposed three-dimensional vector derivation in the second column. Chapters 3–5 deal comprehensively with acoustical circuits, elements, radiation, and directivity patterns. Chapter 6 is a good compendium of available high-quality microphones, their characteristics and uses. Chapters 7–9 are a rich storehouse of descriptions, formulas, and design charts of the principal types of loudspeakers. High-fidelity fans will find this material helpful in selecting or constructing these crucially important parts of their high-fidelity radio receivers and phonographs, for example, page 212 gives directions for the design of a closed-box baffle for a high-quality loudspeaker, and page 242 gives practical design data for