

quantitatively recording various types of radiations, including those which are extremely weak. The problematic "mitogenetic" radiations in the ultraviolet, described by A. G. Gurvich as detectable by biological systems, which were the basis of so much controversy in the 1930's, are conservatively treated by the authors of this book, who point out that "the solution of the whole problem of mitogenetic radiation is in its initial phase." The authors suggest that cellular ultraviolet radiation, the existence of which is indicated by some recent work, may merely be a special case of "dark chemiluminescence," the significance of which is as yet anything but clear.

The credibility of the existence of weak cellular ultraviolet radiation is enhanced by the detection of "dark luminescence," in the ultraviolet or in the visible below the threshold of visibility, from a variety of sources, such as mouse liver, lipids extracted from various human tissues, mitochondria, and growing cultures of yeast. (The data are summarized in a table.) The information pertaining to dark luminescence and the brief discussion of its significance are one of the unusual, interesting features of the book.

In chapter 4, the section on functional chemiluminescence (bioluminescence) is apt to prove disappointing to

those who are well versed in this subject, partly because of certain errors, some of which (for example concerning the structure of *Cypridina* luciferin) could have been avoided by bringing the subject more up to date, and partly because of the brevity of the treatment, which includes detailed consideration of only three systems, among which, however, is the extraordinary system of the jellyfish *Aequorea*, along with the more familiar types found in luminous bacteria and the firefly. The molecular weight of the active component, that is, the bioluminescent protein aequorin, of the jellyfish system is given, probably through a misprint, as 3.5×10^3 , instead of the more nearly correct figure of 3.5×10^4 .

Some awkwardnesses in the translation are greatly outweighed by the value of the book as a whole. It is highly recommended to anyone who is more than casually interested in bioluminescence. Even some specialists may be impressed with the comprehensive discussions of the somewhat neglected use of fluorescence, which provides an unusually sensitive technique, in the investigation of structural and conformational changes in biomolecules, and also by certain other sections of the book.

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Approaches to Pulmonary Dynamics

Pulmonary and Bronchial Vascular Systems. Their Reactions under Controlled Conditions of Ventilation and Circulation. I. DE BURGH DALY and CATHERINE HEBB. Williams and Wilkins, Baltimore, 1967. xvi + 432 pp., illus. \$16.25. Monographs of the Physiological Society, No. 16.

The Pulmonary Circulation and Interstitial Space. Proceedings of a symposium, Chicago, Aug.-Sept. 1968. ALFRED P. FISHMAN and HANS H. HECHT, Eds. University of Chicago Press, Chicago, 1969. xiv + 434 pp., illus. \$15.

Daly and Hebb's *Pulmonary and Bronchial Vascular Systems* is an exposition based on classical physiological approaches to its subject. The two authors have devoted their professional lives to a consideration of the factors governing pressure, volume, and flow in the vascular systems of the lung. This book reflects this devotion, reviewing pulmonary and bronchial vascular hemodynamics, particularly as these are

influenced by nervous impulses, vasomotor changes, and pharmacologic agents. The writing is lucid (in the best English tradition); the references are exhaustive and the conclusions are conservative.

Though the use of the smoked drum is now supplemented by the use of the oscilloscope, tubing of plastic and not of glass is used, and perfusion systems are more sophisticated, there is substantial doubt that the basic issues involved in the regulation of hemodynamics in the pulmonary circulation can be resolved by the methods of classical organ physiology. Thus this book, though it has a certain charm, does not have a modern flavor.

The Pulmonary Circulation and Interstitial Space presents newer approaches to the subject. This volume is an edited summary of a conference on the pulmonary circulation organized by the two editors as one of the satellite

conferences of the International Physiological Meeting in 1968. Fishman has extensive experience and great skill in organizing meetings of this type, and this expertise is reflected in the book.

The book represents an attempt to focus on some new techniques and approaches for solving current problems involving the pulmonary circulation. This involves a multidisciplinary approach employing a number of experts, many of whom are not card-carrying pulmonary physiologists. The results are worthwhile though uneven. Organ physiology is frequently eclectic, and the same has been true of pulmonary physiology. Thus in embracing new disciplines (such as transport physiology, electrolyte metabolism, and systems analysis), there is a danger of simplistic approaches and interpretations. On the other hand, the book deals with a number of important subjects. The treatment of the role of the interstitial space of the lung in pulmonary hemodynamics, in liquid and solute exchanges in the lung, and in gas exchange is particularly noteworthy (indeed, the "interstitial space" was appended to the title of the book in the process of editing). The sections on pleural hydrodynamics and engineering approaches to pulmonary hemodynamics are also excellent. The comments by the invited discussants are generally pertinent and are an important element of the book, as are the summary statements of the section chairmen. In brief, the conference outlines some of the unsolved problems involved in understanding the pulmonary circulation. After reading the volume, one awaits the next conference (in say ten years) with some impatience.

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A Mineral Group

Feldspars. TOM. F. W. BARTH. Wiley-Interscience, New York, 1969. xii + 264 pp., illus. \$14.50.

This book is the first modern attempt at a comprehensive review of feldspar mineralogy and crystallography. It is subdivided into six major sections: one on the general mineralogy and classification of the rock-forming feldspars, one on pseudosymmetry and twinning, one each on the structures, physical properties, and thermodynamic proper-