descendants of Gauss were still alive in America; and the recent occurrence of this unusual name in diplomacy has suggested that exploration in this direction would be of interest as relating to a conspicuous illustration of the dispersal of Central European centers of learning.

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SCIENTIFIC BOOKS

THE COMPARATIVE PHYSIOLOGY OF RESPIRATORY MECHANISMS

The Comparative Physiology of Respiratory Mechanisms. By AUGUST KROGH. vii + 172 pp. 84 figures. University of Pennsylvania Press. $3.00.

IN the spring of 1939, Professor Krogh delivered a series of lectures on "The Comparative Physiology of Respiratory Mechanisms" at Swarthmore College, and these lectures have now been prepared by him in a publication of about one hundred and fifty pages. The principal theme is shown by the title. It is approached through a discussion of the quantity of oxygen needed by various organisms at rest and in activity. The maximum steady metabolism indicates the maximum capacity of the animal's respiratory apparatus. Oxygen is available in the air and water at tensions differing according to the particular environment, and it is the difference between the tension in the environment and at the metabolizing tissues which determines the force available for diffusion in the respiratory exchange.

The external exchange is effected in special devices like gills and lungs, which secure the exchange in many different structures suited to the various animals, their habitat and activity. Special requirements, like heavy work or the restricted supply of oxygen during diving, show the adjustments of respiration under stress.

The blood of animals shows that there are several different chemical mechanisms utilized to facilitate transfer to the respiring tissues. The final transfer of oxygen and carbon dioxide between blood and tissues is related to the distribution and regulation of the capillary circulation, but the details for this last step in the respiratory exchange are still obscure.

The tracheal respiration of insects has particularly interested Professor Krogh. He develops this subject in detail, presenting many descriptions of analyses of the mechanisms involved which originate from his own laboratory, or as a result of his suggestions. There are so many intricate variations in the organs and methods of tracheal respiration, and Professor Krogh's knowledge and appreciation of them is so precise that this is one of the most interesting chapters of the book.

The book is written in a very succinct style, and the examples and illustrations are clear and appropriate. Printing, illustration and arrangement have been very nicely done. Each detail of the exposition is presented separately and distinctly, but the order of material and the brief conclusions always lead toward the complete picture of respiration suited to maintain the animal at its own level of activity and in its own environment.

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ULTRAVIOLET RAYS

The Chemical Action of Ultraviolet Rays. By CARLETON ELLIS and ALFRED A. WELLS. ix + 961 pp. Illus. New York: Reinhold Publishing Corporation. 1941. $12.00

PHOTOCHEMISTRY, more than most branches of physical chemistry, has suffered from the fact that guiding principles and accurate experimental methods have been slow in their development. This is due partly to the fact that many chemists have been inadequately trained in the use of the physical methods necessary for prosecution of sound research work in this field and partly because of the very complexity of the subject itself. During recent years, however, much progress has been made, and to-day there is a growing appreciation of the importance of the study of the effects of electromagnetic radiation both from the standpoint of the pure chemist and of the biologist.

"The Chemical Action of Ultraviolet Rays" is an attempt to provide a comprehensive survey of the effects of visible and ultraviolet light on chemical systems. A glance at the chapter headings will indicate the breadth of the subject covered. Experimental methods, quantum theory, spectroscopy, photochemical reactions, applications to industrial products and applications in biology are all treated. The number of literature references runs into the thousands.

Any book which attempts to cover as much ground as this one will necessarily be open to several criticisms. The uninitiated would have some difficulty in learning much about theories of spectroscopy and of reaction kinetics from a treatment as brief as the one given, but the list of references on experimental methods is very valuable.

The authors have done a real service to photochemists in covering the literature very thoroughly. One will find cited all the important references on nearly all reactions which have been shown to be light sensitive. The reader will thus be able to ascertain many of the facts in this field. It would be much more difficult for him to obtain a clear idea of the mechanisms