## Book Reviews

**Harm, W.: Biological Effects of Ultraviolet Radiation.** IUPAB Biophysics Series.
Cambridge: Cambridge University Press 1980. 216 pp., 90 figs., 6 tabs. Soft bound £ 15.00

Published as one of a series of volumes on biophysics, this textbook has been written for senior undergraduates or for Ph.D. and Master's candidates taking advanced courses. Professor Harm has contributed extensively himself to the advances made in the field covered by the book and so is in a position to write with authority on ultraviolet photobiology.

This book covers all aspects of the biological effects of ultraviolet radiation, from the earliest description of the killing effects of solar radiations made last century, through the recognition of UV mutagenesis by Altenburg in the 1930s, right up to the more recent studies of repair and recovery. The first three chapters are devoted to the aim of providing the reader with a background in the chemistry and physics essential to an understanding of the biological effects. This includes a treatment of the interaction of ultraviolet radiation with molecules and an extensive section on the major photoproducts (produced by UV radiation) of biological significance. Following this, chapters on inactivation of cells and viruses, inactivation of genetic material and causes of lethality, trace the discoveries leading up to the general recognition that DNA is the site of damage causing inactivation. Chapters 7 and 8 concentrate on recovery and repair processes, which are dealt with in much detail, highlighting the fact that no other branch of UV photobiology has contributed more to our general biological knowledge over the past 10 or 20 years.

Mutagenesis by ultraviolet radiation is also dealt with in considerable detail, linked as it is to certain types of repair. The possible mechanisms for this mutagenic effect are discussed, including the currently popular inducible SOS repair mechanism. Professor Harm finishes off his book with chapters on the effects of UV on macromolecular synthesis (including, of course, DNA) on the biological effects of solar UV, and on UV carcinogenesis. Finally, the volume is rounded off with a useful chapter on the UV sensitization of DNA by base substitution, and by use of exogenous molecules.

This book will be of interest to those studying molecular biology. It has an index and a short list of references relating to the more useful publications and reviews in the field.

J.F. Jackson, Glen Osmond

**Wörz-Busekros, A.: Algebras in Genetics.** Lecture Notes in Biomathematics. Volume 36.
Berlin, Heidelberg, New York: Springer 1980. 237 pp., 20 tabs. Soft bound DM 28,50.

This monograph is designed to document in a comprehensive manner the progress made to date in the algebraic treatment of genetics and, in particular, population genetics problems. Although activity in this field reaches back to the 1930's, the present book constitutes the first attempt at a thorough and coherent presentation. It is impressive by the skill with which the great wealth of details is organized and will therefore be well-appreciated by a number of theoretical population geneticists who have felt quite uncomfortable at not being sufficiently informed about the progress being made in this domain. Due to the fact that even rather elementary population genetics problems give rise to non-trivial algebraic structures, the major part of the treatise is concerned with the development of formal algebraic definitions and theorems. This requires the reader to be well-familiar with abstract algebra in order to follow the statements. As the author herself points out, the genetical conclusions to be drawn from the mathematical results are still rather limited in that they mainly refer to random mating populations, or mixtures of these, without taking into account the effects of selection or genetically and phenotypically determined deviations from random mating. However, the generality of the mathematical formulation might allow for genetical interpretations that have not yet been recognized. On the other hand, this hints at an insufficiency frequently complained of, namely, that far too little even elementary biological reasoning is explicitly entered into the process of constructing a mathematical model. To some extent this criticism applies also to the present monograph. It is not immediately clear which biological aspects justify the definition of 'baric algebras', 'train algebras', etc. During the course of the mathematical arguments their technical significance with respect to the existence of equilibrium states and convergence properties becomes apparent. Yet, from the biological point of view, one would like to know what it is good for before one gets into it. This criticism more or less applies to many, if not most, publications treating genetic problems mathematically, so that it does not apply to this book more than to others.

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