BOOK REVIEWS


The first international symposium on the compound eye was held in Stockholm in October, 1965. This book contains 35 papers presented at that symposium. This volume is particularly welcome, for while there exists an abundance of books and review articles on all aspects of vertebrate vision, there is a serious lack of good, up-to-date material on the invertebrates. Perhaps in consequence, it frequently happens that researchers in the vertebrate field tend to ignore many of the exciting new developments occurring elsewhere in the animal kingdom. Yet, if one considers the primary processes of energy transduction in vision, there is little reason for supposing that any fundamental difference exists between rhabdomeres and rods and cones. As reviewed in one of the symposium papers, invertebrate photopigments are retinaldehyde-protein complexes, similar to those occurring in vertebrates. (Another paper describes the microspectrophotometric detection of these pigments and their photoproducts in situ in single rhabdomeres of Calliphora ommatidia.) In contrast with repeated failures in vertebrates, the placement of micro-electrodes within the larger photoreceptor cells of compound eyes has been successfully carried out for a number of years, and the properties of generator potentials investigated. Since the arrangement of photopigment-bearing membranes differs in the two types of receptor, comparison of both systems can teach us much about modes of energy transfer in visual excitation. This work should therefore find a prominent place on the bookshelves of general researchers in vision as well as those of specialists in the invertebrate field.

If symposium volumes are judged by the thoroughness and balance with all aspects of a topic are covered, then “The Functional Organization of the Compound Eye” must rank as an unqualified success. The theme develops easily and smoothly from the Opening Address by Prof. C. G. Bernhard, who discusses some of the historical landmarks in our progress towards and understanding of the functioning of compound eyes. This interesting survey starts with a description of the 17th century observations of Jan Swammerdam and his friend van Leeuwenhoek, proceeds to touch briefly on the work of Johannes Müller (founder of the mosaic theory) and Exner (who developed it), then concludes with more modern studies of Ramon y Cajal, H. K. Hartline, E. D. Adrian and B. H. C. Matthews, and finally Karl von Frisch. The ensuing papers are grouped into four sections, the first of which deals with optics and control of light admission (by migration of the pigment between ommatidia). The remaining sections contain papers on subjects ranging from the photochemistry, fine-structure and electrophysiology of the photoreceptors themselves to the functioning of visual systems at higher neuronal levels. Although the reviewer found that a number of papers were a particular joy to read, either because of his own particular interests or because of the clarity and quality of presentation, it would be out of place to list them here. Certainly there would be others no less noteworthy. It is unfortunate, however, that a sizeable proportion of papers lacked a summary, and that although an author index is included there is no subject index. But these are very minor shortcomings in a book which has such value to all researchers in the physiology of vision.


This volume, which forms part of the major work on clinical surgery, has been compiled from the writings of several authors with the object of presenting the diagnosis and treatment of the more usual conditions met with in ophthalmic practice.

The opening chapter is on the examination of the eye and of the visual fields; subsequent chapters deal with therapeutics, congenital abnormalities, injuries and foreign bodies, glaucoma, endocrine disturbances, the orbit, eyelids and lacrimal apparatus, the conjunctiva, the cornea, lens, uveal tract, retina, optic nerve, strabismus and heterophoria, tropical and nutritional diseases, and brief chapters on colour vision and the management of blindness complete the work.

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In an effort to present a broad outline of the subject in a concise book of this character, the choice of subject matter may present difficulty; in this case the contributors have for the most part selected their material well and have confined themselves to fundamental issues in respect of examination, the description of diseases, and their treatment.

Despite the obvious care of selection there are certain omissions and errors which should be rectified in subsequent editions—these include the failure to describe the technique of tonometry; the management of vitreous loss occurring after the delivery of the lens; the contraindications of zonulolysis; and the perpetuation of two common fallacies: firstly that corneal grafts fail in corneal dystrophies, and secondly that sclerotomy may be of use in expulsive haemorrhage.

The authors have succeeded in presenting the fundamentals of ophthalmology in a concise and lucid manner and with a certain freshness of approach which is unusual in a work devoted to the basic principles of a subject. Whilst the general standard of the whole book is good, certain chapters, among which are those on the examination of the eye, glaucoma, the retina, strabismus, and heterophoria, are especially informative and will certainly be of value not only to the student seeking a basic knowledge but also to the more advanced reader.


This is an interesting and refreshing manual based on the lectures given by Sidney Lerman to his students and residents at the University of Rochester, New York. It is to a large extent unique since it departs radically from the usual small textbook which habitually presents a relatively disconnected sequence of empirical observations and descriptions of a multitude of ocular diseases. This book adopts the logical approach—so far as this can be done within the limits of our present knowledge—of describing these clinical entities as disturbances in physiology and biochemistry supplemented by structural-functional relationships as seen by the electron microscopist. It is significant that the author is both Associate Professor of Ophthalmology and Assistant Professor of Biochemistry at his University and pursued his graduate studies at the Institute of Ophthalmology in London—a good augury for the future of ophthalmology and medicine. It is not to be thought that the marriage of the basic sciences with the clinical art results in a profoundly abstruse treatise which the average student cannot understand; on the contrary, the book is simple, readily understandable and its general philosophy most stimulating. It is to be thoroughly recommended.


Cryosurgical techniques in ophthalmic surgery have developed rapidly in the past few years, stimulated by the use of a simple cryoprobe for cataract extraction described by Krwawicz (1960) and the development of a liquid nitrogen apparatus for retinal detachment surgery by Lincoff and his associates (1964). It is interesting to recall that Bietti had used cryosurgery to close retinal holes as long ago as 1933.

The present author has described, among other instruments, a thermo-electric cryostylet and it is appropriate that he should have produced an atlas of cryosurgical techniques. His views on an adequate instrument are clearly defined in the preface as “an instrument having continuous freezing, reliable insulation, and effective defrosting”. The techniques described in the book are applicable to any such instrument.

The text of the book deals adequately with the use of cryosurgical techniques in cataract extraction and virtually every complication which the surgeon may encounter is presented. Cryopexy in retinal detachment surgery is a method which is increasingly replacing surface diathermy and a valuable chapter on the subject leaves the reader in no doubt as to the requirements and underlying principles of this technique. Following on the established uses, the author includes a further chapter “only for the sake of completeness” in which the more speculative aspects of cryosurgery are briefly reviewed. Future research into the possibilities of cryosurgery must be stimulated by the clear presentation in this book in which the author’s enthusiasm for his subject is equalled only by the excellent and prolific illustrations of the text by Daisy Stilwell. Anyone interested in this facet of ophthalmic surgery will be well rewarded by reading Kelman’s book and anyone who reads it will become interested in cryosurgical techniques.