

# BOOK REVIEWS

**Visual Optics and Refraction – a clinical approach, 2nd ed., David D. Michaels, M.D., The C.V. Mosby Co., St. Louis, 1980, 743 pages \$77.00 Canadian.**

The second edition of *Visual Optics and Refraction* – a clinical approach, by David D. Michaels, has been expanded extensively from the 1st edition published in 1975. In addition, new chapters have been added in several areas.

The text is divided into three sections entitled basics, technique, and management. Chapters 1 and 2 deal with elementary aspects of light, color, optics and vision. Emphasis is placed on clinical aspects of optics and vision. These materials are not usually available in a basic text. Chapter 4 describes spectacle optics in terms of the eye. Chapter 5 carries the subject further to discuss clinical aspects of the physiology of vision including psychophysics of binocular vision, contrast thresholds and color vision. References in these chapters are extensive and up-to-date.

Part II of the text includes 10 chapters and 1 appendix. The subject matter is clinical in nature and it ranges from principles of refraction to basic pharmacology. Chapter 7 has a unique title called "symptoms" relating clinical history, symptoms, and diagnosis. It can only be written by someone who possesses a wealth of experience in the clinical sciences of vision. Objective and subjective refractive techniques are brought up to date in this part of the book and a list of the available modern electronic optometers is included. The chapters on ocular motility, accommodation and vergence cover not only the basic sciences but place heavy emphasis on technique and solution of clinical problems.

The chapter on vision in children begins with applied embryology and

ends with functional evaluation. In between, the author discusses some ocular features of childhood diseases, functional disorders and examination techniques. The appendix to this part on the clinical use of statistics, is quite useful to the busy practitioner although its content is limited. However, part III that follows the appendix begins with some statistics thus making the transition from the section on "technique" to the section on "management" rather smooth. After describing aspects of ametropia, anisophoria and aniseikonia, the author devotes a whole chapter to presbyopia including a section on pathophysiology of the aging eye. Aphakia, is dealt with extensively in Chapter 19. Optical characteristics of cataract spectacles, contact lenses and intraocular lenses are also covered. Chapter 20 is on low vision. It is a welcome addition for any practitioner who deals with low vision patients occasionally. An appendix to the chapter also gives a list of sources for low vision aids. In a similar fashion Chapter 21 deals with contact lenses. At the conclusion of the chapter, a list of addresses of major contact lens laboratories is included. Strabismus is the title of the last chapter. It touches on all aspects of strabismus with a long list of references for the serious reader to refer to.

The second edition is substantially richer, and longer than the first by over 200 pages. The book can be treated as a source of reference in any ophthalmic practitioner's office. The author has provided adequate descriptions of recent advances in vision particularly on refraction and contrast sensitivity measurements. Perhaps the greatest value of this book lies in Dr. Michaels' ability to translate and apply theoretical knowledge in vision to clinical aspects of vision that confront the practitioner daily in his/her practice. It is also a most appropriate text for undergraduate courses of visual or physiological optics.

**George C. Woo, O.D., Ph.D.**

**Optics for Clinicians by M.L. Rubin, 2nd Edition, Triad Scientific Publisher, Gainesville, Florida, 1974.**

The objective of the author is to present an elementary, general purpose, practitioner's text of optics that is both reasonable in length and sufficient in depth to satisfy the everyday clinical refractionist. To this end, he has been successful. This text is divided into two large sections, one on basic optics and the other on visual optics. In addition, a small section is devoted to light.

In basic optics, the author employs examples, diagrams and tables to illustrate the principles of vergence and lenses, cardinal points, Snell's law of refraction, prisms and astigmatic refraction. Unlike other texts on elementary optics, the author also discusses the Maddox rod, the optical cross, and transposition of cylinders in the same section. This section probably serves the needs of residents in ophthalmology. For optometry students and optometrists, this section involves pleasant and interesting reading.

The visual optics section deals with model eyes, accommodation, refractive error, correction of ametropia, use of cross cylinders in refraction, the stenopeic slit, telescopic systems, optometers, aniseikonia, prismatic effect of lenses, optics of bifocals and aberrations. A section on instrumentation including ophthalmoscopy, retinoscopy, lensometry and keratometry is also presented. Throughout this section, both clinical points and examples are used extensively by the author quite effectively by citing real situations in practice. The style of writing is very easy to follow making reading an interesting task. This, I believe, is a major accomplishment by the author. This section is useful to both the student as well as the practitioner. Rereading of the material as the author stated will maintain and strengthen one's basic foothold in practical optics.

Perhaps the small section on the physical nature of light is the weakest portion of the text.



In summary, it is an elementary text that deserves the attention of any clinician engaging in optics.

G.C. Woo

**Optics, Ninth Edition, W.H.A. Fincham and M.H. Freeman, Butterworths, Toronto, 1980, 498 pages, hard cover, illustrated.**

Nearly all Canadian optometrists will remember Fincham's *Optics* from their school days. Although it was a most excellent book, many optometry students found it a bit on the austere side. For those, the 9th edition, by Fincham and Freeman, is a pleasant surprise and a refreshing improvement on the older editions.

The first edition of Fincham's *Optics* was printed in 1934. The book was improved steadily and meticulously through the many ensuing editions, becoming a polished and exact source of information, particularly in geometrical optics. With the advent of the 8th edition, relatively large changes were made, consisting mainly in Freeman's revisions of the chapters on physical optics. In the 9th edition, Freeman's contributions have been greatly expanded.

This edition differs greatly from previous ones both in physical appearance and content. Thus, its page size has been increased from 5½ x 8½ in. to 6 x 9 in. This permits the use of slightly larger diagrams. The wider margin results in a less crowded appearance than in previous editions. More photographic plates have been added, such as for example a reproduction of a double-swept contrast/frequency grating, a photograph of strain patterns rendered by polarization and a diagram of a fibre optics face plate – all relatively recent developments in the optical sciences.

As for contents, the chapters on geometrical optics remain largely unchanged, as they were originally written by Fincham. On the other hand, the chapters on polarization and aberrations have been greatly changed. More modern material

and more explicit diagrams have been introduced.

A completely new chapter deals with the optical properties of the eye. It includes recent developments on the schematic eye, chromatic aberration of the eye, diffraction and the eye, and aberrations of the crystalline lens and cornea. It also includes a discussion of the optical performance of the eye in terms of the line and point spread functions, modulation transfer functions, and contrast threshold functions with the sine wave gratings. The chapter reflects the tremendous expansion of knowledge that has taken place in this area of optics in recent times.

The new chapter contains some inaccuracies. One example is the reproduction of Campbell and Green's data in Figure 20.16, pertaining to the relationship between contrast sensitivity and defocus. Because of the smoothing out of the original data points, the functions are shown as having discrete minima at certain dioptral values of the independent variable. In fact, these functions usually show a plateau, or at least many irregularities through the near-focus range. Disconcerting is also the omission from the Figure of the very important function representing low frequencies. This is the type of inaccurate and misleading reproduction that will be perpetuated in students' notes and in other textbooks. It would have been far more informative to show the curves as they appear in the original article. However, in the context of the book as a whole, this is a minor criticism.

In the various sections of the book, several features of immediate interest to the optometrist have been added. Examples are the laser optometer, photochromic spectacles, and a more detailed chart summarizing the characteristics of various types of ophthalmic glass. New and very useful material has been added to the appendix section. Thus, there are computer programmes for ray tracing. The optical symbols used in the book have been set out in a table with references to the pertinent sections in the text.

On the whole, *Optics* by Fincham and Freeman remains a concisely written book presenting a wealth of information on a relatively broad spectrum of topics. It is highly recommended as a reference book for the optometrist.

Arnulf Remole, B.F.A., O.D., M.S., Ph.D.

#### Erratum

In the book review by Prof. Anthony Cullen, published in the March 81 issue, two sentences were omitted in the middle of paragraph four — pg. 56. Paragraph 4 is reproduced below. The missing sentences from the original are in italics.

Recurrent herpes simplex (HSV) and the mechanisms of herpetic latency are described; methods of recurrence prevention of HSV ocular are proposed and include the moderation or elimination of triggering factors such as ultraviolet exposure, fever, stress and corneal insult. The insidious location of the HSV virus in sensory nerves ensures its protection from elimination from the system using current therapeutic techniques. A problemless extended wear (EW) *contact lens has long been the summa perfectionis of contact lens research. Unfortunately, Anthony Nesburn's chapter on EW Lenses concentrates on those EW lenses approved or approved for investigation by the U.S. — F.D.A. and is too parochial for the international contact lens community.* The suggestion that cycloplegia during the first few days of extended wear is helpful because of local edema and mild iritis may raise a few eyebrows but most will accept the "cardinal rule" that pain, irritation or redness in previously comfortable EW patients must be treated as infection until proven otherwise. Perry Binder concludes, at the end of his comprehensively referenced chapter on orthokeratology that "The large amount of charlatanry that has tainted orthokeratology has discouraged scientific investigation of the process. Studies such as those



performed by Kerns have helped place orthokeratology in its proper perspective”.

**Contact Lenses; Volume I Butterworth's Woburn Mass. Edited by Janet Stone & Anthony J. Phillips 375 Pages. Price (U.S.) \$79.95**

This book is a new edition in 1980 of an original text from 1972. Because of the rapid expansion in contact lens materials and technology in the past decade, the second edition offers both student and experienced practitioner alike, an updated source of reference for hard contact lenses.

The manuscript is well organized, progressing from the history of contact lenses and fundamental aspects, to advanced clinical techniques. An excellent chapter entitled, “Drugs and Solutions in Contact Lens Practice and related Microbiology” is co-authored by G.A. Hopkins, who taught at the School of Optometry in Waterloo for one term. The chapter

clearly defines the various preserving agents in contact lens solutions and discusses chemicals for use with both hydrophobic and hydrophilic lenses.

An excellent colour plate section is also included in the book with above average examples of Burton lamp patterns and anterior segments with the biomicroscope. Contingent with this chapter is a chapter on external eye photography which although not exhaustive in its content, provides good basic informative for



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the optometrist who is interested in this aspect of practise.

Among the appendices is a very complete table of various contact lense solutions, manufacturer's names, list of preserving agents and additional remarks.

Volume 2 of this series was not available for me to review but would appear to have tremendous appeal to Canadian Optometrists because of its considerable content regarding hydrophilic lenses. Chapters that would likely be of considerable interest to us all were for example; the verification of soft contact lenses; toric contact lens fitting; modification procedures; and finally special types of contact lenses and their uses.

In general, I think the two volumes are very well prepared and would be a worthwhile addition to the Optometrist's library who is keenly interested in contact lens theory and the provision of contact lens therapy.

**G.A. Grant, O.D.**



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\*Although efforts are being made to create a third school of optometry in the west, the location is by no means certain. For administrative reasons we urge that all donations for a third school therefore not specify location.