developments in terms of rhodopsin transport and the role of the interphotoreceptor matrix. This section finishes in the field of molecular biology with an extremely useful description of the role of genes in retinoblastoma.

The final section on functional organisation of the retina gives the reader an insight into the advances facilitated by the use of modern biochemical techniques and intracellular recording systems. Particular emphasis is given to the role of monoclonal antibodies in eliciting further information on transmitter systems in the neural retina.

This is a delightful book, beautifully written and well illustrated, and one that I would recommend to all my colleagues who have an interest in understanding the ways in which the retina works. I particularly recommend it to clinical ophthalmologists, for from one all too short volume they will be able to assimilate a quarter of a century of research. I congratulate the authors and now look forward to future volumes in this series. JOHN MARSHALL

Spatial Vision. By RUSSELL L DE VALOIS AND KAREN K DE VALOIS. Pp. 381. £65·00. Oxford University Press: Oxford. 1988.

This monograph represents a summation of the experimental results and the views of this extremely distinguished team, and as such is welcome: it is a view of the visual world from Berkeley, and an interesting one at that. It will be used by those active in the field as a valuable source. The authors' presentation is heavily influenced by their belief that a form of piecewise harmonic analysis is carried out in the visual system. They adduce much evidence for this idea. For example, under certain circumstances cortical cells respond to the higher harmonics contained in a square wave grating as though they were carrying out a frequency analysis; the actual harmonic content is of course not perceived at all by the observer. For this reason Chapter 1 consists of a very clear and well illustrated introduction to linear systems analysis, pitched initially at so low a level that this reviewer anticipated that the book would consist of expanded lecture notes for students. However, parts of the book are extremely detailed, and there is no attempt to survey the field. Thus, although the first chapter ends with a warning, 'Quite different from applying Fourier analysis . . . is the construction of a machine to *carry out* Fourier analysis,' nonlinearities are discussed only in the last chapter, no school of work which presents contrary views is mentioned, and the problem of how the brain defines both amplitude and phase is treated in a sanguine manner.

It is thus not clear for whom the monograph is designed. Its main concern is neurophysiology, and the applications to sensory psychology are very much secondary. It covers the entire visual system, dealing with optics, the anatomy of the visual pathway, retinal histology, photochemistry and visual transduction en passant. While each section would be required in a general textbook the emphases here are quite different. Thus the cortical magnification factor receives five pages (the authors have contributed to this problem by 2-deoxyglucose studies, and reproduce a handsome illustration), while the anatomy and histology of the primary, secondary, and tertiary cortical areas merit one page and no figure. Again, clinical measurement of low-frequency contrast sensitivity is discussed, and in view of the authors' bias one might expect them to be enthusiastic. But: 'Many causes of high spatial frequency sensitivity loss are optical, and if so can often be alleviated by . . . spectacle lenses. Low spatial frequency losses in sensitivity cannot be corrected by such simple measures. Purely on practical grounds . . . it makes sense for clinicians to expend their limited time and resources on those problems which can be alleviated rather than others . . . which cannot be treated.'

Arguments such as that and omissions such as those noted above must detract from the book; moreover there are other problems. The section on transduction is out of date: there is no mention of the response shaping in peripheral retina, or the colour organisation of the primate visual system described last year by Hubel and Livingstone. Maybe the authors are not convinced by this work, but they should not dismiss it with a reference to 'Tootell *et al*, in preparation.' This is particularly unfortunate because their plate showing false colours is poor. It shows a red-yellow and a red-blue chequerboard, in which reds are meant to differ because of Bezold's effect. Although, as the caption states, the two sets of red squares *do* look different, this is due at least in part to very bad colour printing and not to any psychological or neurophysiological property of the viewer's visual system. Also, in general, the text refers to, but does not describe, the experiments and the results shown in the figures, and the captions are not in themselves long enough to provide instant understanding. This, combined with pages in which detailed arguments are highly compressed does not make for enjoyable reading.

G B ARDEN

The Vitreous and Vitreoretinal Interface. Eds CHARLES L SCHEPENS AND ADOLPHE NEETENS. Pp. 315. DM 128·00. Springer-Verlag: Berlin. 1987.

This book has been compiled by two of the more senior members on the international ophthalmic stage. There are 18 chapters, all dealing with different aspects of the vitreous. The book has been very well produced, and the overall effect is extremely pleasing. The chapter layout is clear, and the illustrations mainly of a very high standard, although it might have been nice to see more colour. (The legend for Fig. 2 on page 238 is inaccurate.)

As one would expect in a book devoted to a subject about a structure that is difficult to see and about which we are still extremely ignorant, the link between what is actually known and the clinical situations to which this knowledge is applied is rather tenuous. It is not therefore surprising that vitreoretinal surgeons would not agree with many of the clinical interpretations contained in this book. For example, it is surprising to see the use of intraocular gases under the title of 'vitreous substitution'. Again, the explanation of macular oedema in diabetes is contentious, as are the views expressed about open sky vitrectomy. One of the main clinical tools we have for studying the vitreous, particularly when there are opacities of the media, is ultrasonography. Many readers might have preferred a more thorough account of the diagnostic and prognostic value of this technique. Each chapter has been carefully referenced, with an extensive literature to allow further reading.